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A COMPREHENSIVE COHORT STUDY OF THE RELATIONSHIP BETWEEN THE RELATIVE RISK OF RESPIRATORY TRACT INFECTION AND POST-BARIATRIC SURGERY IN TAIWANESE POPULATION WITH MORBID OBESITY

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INTRODUCTIONÂ Â Â Â

Patients with obesity are at higher risk for mortality and lengthy hospitalization as result of respiratory tract infections (RTIs). Weight loss therefore may have protective effects against RTIs. Current literatures have yet demonstrated bariatric weight reduction surgery can reduce the risk of RTIs for those who cannot control their weight via conservative modalities.

OBJECTIVESÂ Â Â Â

The aim of this study is to determine whether weight reduction through bariatric surgery procedure reduces the relative risk of respiratory tract infections.

METHODSÂ Â Â Â

We retrieved data from Taiwan National Health Insurance Research Database looking retrospectively for candidates which meet the selection criteria of age between eighteen and fifty-five years with clinical diagnosis of morbid obesity (ICD 9 code: 278.0 or 278.1) under healthy mental state diagnosed from 2005 to 2010. Adopting 1:1 propensity score matching technique, we randomly divided the population pool according to parameters of age, sex, comorbidity, and previous respiratory tract infection history to post-bariatric surgery and non-bariatric surgery groups. Those who did not meet the NHI criteria for bariatric surgery but paid private fees for bariatric surgery as well as those who withdrew from the follow-up less than 1 month from both groups were excluded. This study was approved by the Institutional Review Board of E-Da Hospital and conducted in accordance with the principles of the Declaration of Helsinki. The primary end point was the incidence of respiratory tract infections including pneumonia and bronchitis in both groups. Secondary endpoints were mortality events, length of hospital stay, and total cost of hospital treatment due to RTI. Differences in the risks of RTS between both bariatric surgery and non-bariatric surgery groups were analyzed using Kaplan-Meier statistical analysis and log-rank test. A two-tailed $P < 0.05$ was deemed statistically significance.

RESULTSÂ Â Â Â

A total of 6473 patients who met our selection criteria were enrolled into our retrospective, population-based, matched cohort study. Adopting 1:1 propensity score matching technique according to parameters of age, sex, comorbidity, and previous respiratory tract infection history, each group has 2052 patients. The follow-up period was 64.2 months. There was a relatively lower risk of respiratory tract infections (RTIs) in post-bariatric surgery (PBS) group in compared to the non-bariatric surgery (NS) group (4.63% vs 10.00%, p <0.001). There were higher prevalence rates of pneumonia (4.82% vs. 2.00%, p <0.001) and bronchitis (1.56% vs. 0.49%, p<0.001) in NS group in compared to PBS group. The statistical analysis of the secondary endpoints did not find post-bariatric surgery group has lower mortality event than non-bariatric surgery group. However, PBS group has shorter length of hospital stay (median 5 vs 7 days) and lower clinical cost (median 617.00 USD vs. 925.00 USD, p=0.001) than NS group

CONCLUSIONÂ Â Â Â

Morbidly obese patients who underwent bariatric weight reduction surgery had significantly lower risk of RTIs in compared to those without. Bariatric surgery should be considered for those who have morbid obesity issue with frequent RTI hospital admissions.

1. E-da Hospital Research Foundation (EDAHP-107-011, EDAHI-109-001)

RISK ASSESSMENT AND PROGNOSTIC ANALYSIS OF PATIENTS WITH NECROTIZING FASCIITIS IN EMERGENCY DEPARTMENTS: A MULTI-CENTER STUDY

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INTRODUCTIONÂ Â Â Â

Necrotizing fasciitis is a regional soft-tissue infection that progresses rapidly, can result in systemic toxicity, and is potentially life-threatening. The initial prognostic factors for predicting the disease’s progression and severity remain controversial.

OBJECTIVESÂ Â Â Â

This study aims to evaluate the early prognostic factors of patients diagnosed with necrotizing fasciitis in the emergency department (ED).

METHODSÂ Â Â Â

This is a retrospective study using the electronic medical databases of six major hospitals in Taiwan. During March 2004 and May 2017, all patients with an ED diagnosis of necrotizing fasciitis were cataloged. Variables collected include age, initial vital signs, Glasgow coma scale, initial triage classification, and results of imaging and laboratory studies. Prognostic indicators collected were consultation, surgical intervention, ICU admission, and mortality. Laboratory Risk Indicator for NF (LRINEC) and qSOFA scores were also calculated and analyzed.

RESULTSÂ Â Â Â

A total of 1,358 patients were enrolled. Of these, 660 patients received emergent surgical intervention after consulting the plastic surgeon, 791 patients were admitted to ordinary wards and 322 to ICUs, and 170 patients died during the same hospital admission. Higher initial heart rate ($p < 0.0001$), lower initial systolic blood pressure ($p = 0.0001$), lower platelet count ($p = 0.0017$), and increased band cell ratio ($p = 0.0018$) were associated with significantly increased probability of ICU admission. Higher LRINEC score was predictive of surgical intervention ($p < 0.0001$), admission ($p = 0.004$), and ICU admission ($p = 0.04$), and higher qSOFA score was predictive of ICU admission ($p < 0.0001$) and mortality ($p < 0.0001$). A more general predictive model is under development and will be presented at the conference.

CONCLUSIONÂ Â Â Â

For patients diagnosed with necrotizing fasciitis in the ED, initial heart rate, systolic blood pressure, platelet count, and band cell ratio were predictive of subsequent ICU admission. Both LRINEC and qSOFA scores are useful for outcome prediction.

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RAPID ANTIBIOTIC SUSCEPTIBILITY TESTING OF BACTERIA FROM PATIENTSÂ€™ BLOOD WITH SURFACE-ENHANCED RAMAN SPECTROSCOPY

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INTRODUCTIONÂ Â Â Â

Timely appropriate antibiotic usage is crucial for sepsis control. However, culture-based microbiological diagnosis is time consuming, which might be associated with ineffective treatment and overuse of antibiotics. To solve this problem, we start a serial study aiming at established a rapid antibiotic susceptibility test (AST) based on surface-enhanced Raman spectroscopy (SERS). A prototype has been successfully tested on positive blood culture of *S. aureus* and *E. coli* in our previous work.

OBJECTIVESÂ Â Â Â

In this new phase, we advanced the study to include more common clinical blood-culture pathogens, which were tested with four antibiotics of various categories for each. The results by SERS-AST method are put side by side with those by official VITEK® 2 automatic system to check the validity and reliability.

METHODSÂ Â Â Â

After pretreatment, bacteria were recovered from blood-culture mixtures and then treated with antibiotics for two hours (one additional hour for slow-growing bacteria). Bacterial SERS measurements were then followed to check the specific Raman shift, which was designated as the SERS biomarkers for AST. The difference between experimental and control one provides the discrimination for drug susceptibility.

RESULTSÂ Â Â Â

There were 180 samples collected from positive blood culture bottles with *S. aureus, S. epidermidis, E. faecium, E. faecalis, E. coli, E. cloacae, K. pneumonia, P. aeruginosa* and *A. baumannii* (20 samples for each species). Significant signal reduction of bacterial SERS biomarker after antibiotic treatment was noted in susceptible strains, while it remained relatively invariant in resistant strains at all tested drug concentrations. The AST results obtained by SERS-based method were highly consistent (95.5%) with those by VITEK® 2 automatic system.

CONCLUSIONÂ Â Â Â

A rapid AST protocol based on SERS was successfully tested on 180 positive blood culture samples of *S. aureus, S. epidermidis, E. faecium, E. faecalis, E. coli, E. cloacae, K. pneumonia, P. aeruginosa* and *A. baumannii.* The results are highly in accord with those acquired from VITEK® 2 automated microbiology diagnostic system.

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THE PREDICTIVE FACTORS OF CLINICAL OUTCOME IN GERIATRIC PATIENTS WITH BACTEREMIA OF VIBRIO VULNIFICUS: A HOSPITAL-BASED RETROSPECTIVE STUDY

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INTRODUCTIONÂ Â Â Â

The mortality rate of *Vibrio vulnificus* related wound infections are high. In patients complicated with bacteremia, the mortality rate increases up to 50%. The majority of patients with bacteremia of *Vibrio vulnificus* die within the first 48 hours. Bacteremia of *Vibrio vulnificus* in geriatric patients was discussed rarely.

OBJECTIVESÂ Â Â Â

The aim of this study is to investigate the predictive scores of clinical outcome in geriatric patients with bacteremia of *Vibrio vulnificus* in the emergency department.

METHODSÂ Â Â Â

We conducted a hospital-based retrospective study of bacteremic patients of *Vibrio vulnificus*. Data were collected from the electronic clinical database of Taichung Veterans General Hospital between January 2012 and December 2018. The bacteremia of *Vibrio vulnificus* was confirmed by blood culture. Demographics, clinical characteristics, laboratory and microbiological investigations, treatment, and outcome in patients with bacteremia of *Vibrio vulnificus* were collected for analysis. We divided enrolled patients into two groups (≥75 years and <75 years).

RESULTSÂ Â Â Â

Seventeen patients with bacteremia of *Vibrio vulnificus* were enrolled, including 12 males (70.59%) and 5 females (29.41%), with a mean age 60.19±17.20 years (range, 32-90 years). Group 1 (≥75 years) had 4 patients (23.53%) and group 2 (<75 years) had 13 patients (76.47%). The average length of hospital stay was 15.82±13.79 days (range, 1-55 days). There were significant differences between two groups, including Rapid Emergency Medicine Score [REMS] (8.50±3.00 and 5.31±3.12) (p=0.035), heart rate (92.50±20.87 vs. 121.00±20.72) (p=0.049), blood urea nitrogen (56.33±23.76 vs. 15.17±7.07) (p=0.007), hemodialysis during hospitalization (50% vs. 0%) (p=0.044), renal failure (75% vs. 7.69%) (p=0.022), and mortality rate (75% vs. 7.69%) (p=0.022).

CONCLUSIONÂ Â Â Â

Although slower heart rate in geriatric patients (≥75 years) with bacteremia of *Vibrio vulnificus*, they had high REMS, elevated blood urea nitrogen, renal impairment, risk of hemodialysis, and increased mortality rate. Emergency physicians must keep in mind of high index of suspicion in geriatric patients (≥75 years) with bacteremia of *Vibrio vulnificus*. We recommended to prescribe an early-goal directed therapy with antibiotics and surgical intervention if indicated as soon as possible, particular in those with high REMS.

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HUMAN UMBILICAL CORD-DERIVED MESENCHYMAL STEM CELL THERAPY FOR ACUTE RESPIRATORY DISTRESS SYNDROME PROVIDES SAFETY, FEASIBILITY AND FAVORABLE OUTCOMES: A PHASE I CLINICAL TRIAL

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INTRODUCTIONÂ Â Â Â

Acute respiratory distress syndrome (ARDS) is a life-threatening condition with high mortality and morbidity, and yet regrettably there still was no effective pharmacotherapy. Growing data from preclinical studies support the safety and efficacy of cell-based therapies for the treatment of ARDS or sepsis-associated ARDS. The aims of this phase I clinical trial were to investigate the safety, feasibility and possible adverse events of single-dose human umbilical cord-derived mesenchymal stem cells (HUCDMSCs) in patients with moderate-to-severe ARDS.

METHODSÂ Â Â Â

Patients meeting the Berlin definition of moderate-to-severe ARDS with a PaO2/FiO2 ratio <200 were prospectively enrolled in the intensive care units at Kaohsiung Chang Gung Memorial Hospital between December 2017 and August 2019. Scaling for doses was required by Taiwan Food and Drug Administration as: the first three patients received low-dose HUCDMSCs (1.0x10^6 cells/kg), the next three patients with intermediate dose (5.0x10^6 cells/kg), and the final four patients with high dose (1.0x10^7 cells/kg).

RESULTSÂ Â Â Â

Nine consecutive patients were enrolled into the study. In-hospital mortality was 33.3% (3/9), including two with recurrent septic shock and one with ventilator-induced severe pneumomediastinum and subcutaneous emphysema. No serious prespecified cell infusion-associated or treatment-related adverse events were identified in any patient. Serial flow-cytometric analyses of circulating inflammatory biomarkers (CD14+CD33+/CD11b+CD16+/ CD16+MPO+ /CD11b+MPO+/CD14dimCD33+) and MSC markers (CD26+CD45-/CD29+CD45-/CD34+CD45-/CD44+CD45-/CD73+CD45-/ CD90+CD45-/CD105+CD45-/CD26+CD45-) were notably progressively reduced (p for trend<0.001), whereas the immune cell markers (Helper-T-cellCD3+CD4+/Cytotoxity-T-cellCD3+CD8+/Regulatory-T-cellCD4+CD25+FOXp3+) were notably increased (p for trend<0.001) after cell infusion.

CONCLUSIONÂ Â Â Â

The result of this phase I clinical trial showed that a single-dose intravenous infusion of HUCDMSCs was safe with favorable outcome in nine ARDS patients. (The trial is registered on the website of ISRCTN registry with No. ISRCTN52319075)

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CONTINUOUS MONITORING ELECTROCARDIOGRAPHIC QTC INTERVALS OF COVID-19 PATIENTS BY A CLOUD-BASE IN-HOSPITAL TELEMETRY SYSTEM WITH ARTIFICIAL INTELLIGENCE ASSISTED DIAGNOSIS Â€“ EXPERIENCE FROM TAIPEI MEDICAL UNIVERSITY HOSPITAL1

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INTRODUCTIONÂ Â Â Â

Confronting the global pandemic of the highly contagious and hazardous COVID-19, attitudes and behaviors within toward our daily life had been changed in many aspects, especially for the healthcare system. Considering to reduce the exposure of healthcare professionals (HCP) to SARS-CoV-2; the expense of valuable personal protection equipment (PPE), and the time-consuming and laboring cleaning and disinfection of medical devices, remote monitoring may possibly solve the pain points when HCP provide medical services to those COVID-19 patients.

OBJECTIVESÂ Â Â Â

TTo validate the feasibility of the in-hospital telemetry by applying PhysioGuard ECG-QT analysis system for remotely detecting the changes of ECG QTc/QT intervals in patients with COVID-19.

METHODSÂ Â Â Â

The physioGuard ECG-QT analysis system has been approved by US FDA Emergent Use Authorization (EUA) – Including the MiCor wearable ECG and Cloud-base AI diagnosis platform. The ECG QT/QTc intervals of COVID-19 patients were recorded by themselves for three times daily and remotely monitored. The patient was asked to record the ECG signal him/herself according to the instruction from the HCP and the ECG signal can be transmitted to the AI Cloud via the WiFi and mobile devices. The AI algorithm finds the two fiducial points (Q start and T end) on the averaged beat ECG and calculate the QT/QTc intervals. The results including ECG waveforms were transmitted to the cellphone of HCP in charge for further review.

RESULTSÂ Â Â Â

We calculated QTc intervals of the ECGs recorded from Lead II and V5 by the PhysioGuard ECG analysis system and the results were highly correlated with the QTc intervals detected by traditional 12-lead ECG (General Electronics) (Lead II, r= 0.842, p<10-12; Lead V5, r=0.843, p<10-11); From 10th April to 20th April 2020, totally 4 female COVID-19 patients (Patient A:30, B:33, C:50 and D:66 years old) diagnosed by Taipei Medical University Hospital receive the telemetry ECG QT interval monitoring. Patient A received supportive treatment only and the QTc Intervals were 399, 431 and 438 msec. Patient B received Hydroxychloroquine (HCQ) and the QTc Intervals were 445, 437, 438 and 436 msec. Patient C was intubated due to respiratory failure and need mechanical ventilation, she received HCQ and Kaletra and the QTc Intervals were 427, 421, 418, 435, 428, 427, 442, 423 and 408 msec. And patient D received HCQ and her QTc Intervals were 394, 404, 382, 403, 404, 405, 409, and 410 msec.

CONCLUSIONÂ Â Â Â

This in-hospital wearable remote monitoring device and Cloud-base AI analysis platform were demonstrated the ability to provide timely and accurate ECG QTc monitoring of COVID-19 patients under drugs that may prolong QT intervals (HCQ, Azithromycin) and even cause arrhythmia. In addition, this system may reduce the exposure of HCP to the hazardous SARS-CoV-2 during the COVID-19 pandemic.

QUANTIFYING VASCULAR PERMEABILITY USING MODEL OF HEMODILUTION AS A PROGNOSIS FACTOR OF SEVERE SEPSIS

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INTRODUCTIONÂ Â Â Â

Fluid resuscitation with crystalloids may increase total blood volume (TBV) and cause iatrogenic hemodilution in patients with severe sepsis. If the vascular permeability were negligible, we could simply predict the hemoglobin (Hb) level after resuscitation by following formula: Initial Hb level x TBV = Final Hb level x (TBV + Crystalloid Volume). Discrepancy between predicted Hb level and actual observation may provide insight into severity of vascular leak in sepsis patients.

OBJECTIVESÂ Â Â Â

We aim to quantify vascular permeability, and delineate the relationship between extent of vascular leak and clinical outcome in patients with severe sepsis.

METHODSÂ Â Â Â

We conducted a retrospective analysis of a patient cohort from Medical Information Mart for Intensive Care III (MIMIC-III) database. Our analysis included ICU patients ≥ 18 years of age who met Angus criteria for severe sepsis. We extracted physiological and treatment parameters obtained within 72 h after ICU admission. We excluded patients who received red blood cell transfusion, colloid infusion, or had documented active bleeding during the 72 h study period. Patients with diagnosis of primary polycythemia at enrolment, or had pulmonary edema defined as PaOâ‚‚/FiOâ‚‚ ≤ 100 mmHg were also excluded, given these situations are known to alter circulating red blood cell concentration. We estimated TBV using following formula: TBV = Weight × 75 mL/kg (male) or 65 mL/kg (female). We defined the difference between actual Hb level and predicted Hb level as “hemoglobin deviation”.

RESULTSÂ Â Â Â

We eventually reviewed data from 3892 patients. The median SAPS II score was 27 and the overall 90-day mortality was 27.4%. The median Hb level (IQR) on the first day in ICU was 10.7 (9.6–11.9) g/dL, and decreased to 10.2 (9.2–11.3) g/dL on the second day ($P < 0.001$), and 10.0 (9.1–11.2) g/dL on the third day ($P < 0.001$). Change in Hb level after 72 h resuscitation had an significant but weak association with intravenous fluid volume ($R^2 = -0.14$, $P < 0.001$).

The hemoglobin deviation among sepsis patients were majorly positive, which represented intravascular fluids shifting into tissues. We also identified significant but weak association between hemoglobin deviation and SAPS II score ($R^2 = 0.11$, $P < 0.001$). Generally, patients with larger hemoglobin deviation had higher 90-day mortality. The highest mortality (34.48%) was observed in patients with hemoglobin deviation > 7. By contrast, negative hemoglobin deviation

was associated with better outcome, and the lowest 90-day mortality (14.63%) was observed in patients with hemoglobin deviation < -2. Among the patients died within 90 days, the hemoglobin deviation was significantly higher compared to those who survived (Adjusted-P < 0.01).

CONCLUSIONÂ Â Â Â

We propose hemoglobin deviation as a new parameter for evaluating vascular leak in sepsis patients. Abnormally high hemoglobin deviation is associated with poor outcome.

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CANDIDAEMIA IN INTENSIVE CARE UNIT: A 5 YEARS OF A RETROSPECTIVE STUDY IN A PORTUGUESE HOSPITAL

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INTRODUCTIONÂ Â Â Â

Candidaemia remains an important cause of mortality, especially in hospitalized and immunocompromised or critically ill patients. Studies have reported that candidaemia makes up 10% of all bloodstream infections (BSI) in the Intensive Care Unit (ICU) and has a mortality rate of 30%–60%.1 Patients admitted to an ICU are at high risk for developing candidaemia.2 Some risk factors (RF) in ICU are cumulative, like central venous catheter (CVC), broad spectrum antibiotics, surgical interventions and total parenteral nutrition (TPN). Timely empirical treatment is often decisive in the prognosis.

OBJECTIVESÂ Â Â Â

This study aimed to evaluate the prevalence, clinical characteristics, risk factors, outcomes, and prognostic factors of adult patients with candidaemia in ICU. It also aimed to identify the isolated Candida different species and their resistance to antifungals.

METHODSÂ Â Â Â

We conducted a retrospective study of patients with candidaemia in the ICU from 2015 to 2019. Demographic and clinical data was collected. Candidaemia was defined as at least one positive blood culture to Candida species.

RESULTSÂ Â Â Â

A total of 28 BSI by Candida spp. were identified in 17 males (60.7%) with 56.5 years old of median age [Interquartile range (IQR): 42.5-69.8]. Median APACHE II was 17.0 [IQR: 11.0-22.5]. The most frequent RF identified were: central venous catheter (CVC) (n=24), large spectrum antibiotics (n=22), and TPN (n=10). Half of patients were submitted to surgery (abdominal surgery in 6 cases, 21.4%). The median Candida score was 3 [IQR: 2.0-5.0]. CVC was the most frequent focus of infection (n=7; 25.0%), followed by abdominal and urinary focus, witch one with 5 patients (17.9%). In two cases the patients had 2 identified Candida species in the same blood culture. Susceptibility data were available for all microorganisms (n=30). C. albicans was the most commonly isolated with 13 (43.3%), followed by C. parapsilosis and C. glabrata which one with 7 patients (23.3%). Only 6 microorganisms were sensible to all antifungals (20.0%). Between the others we, observed resistance to azoles in 16 (53.3%), resistance to equinocandins in 5 (16.7%) and resistant to azoles and equinocandins in 3 (10.0%). We found resistance to azoles in 9/13 C. albicans (69.2%). The median length of ICU stay was 16 days [IQR: 6.0-29.0] and length of hospital stay was 48 days [IQR: 26.5-81.3]. The in-hospital mortality rate was 35.7% (n=10).

CONCLUSIONÂ Â Â Â

The identified RF are in line with the published literature. Like we observed, C. albicans is still a leading cause of candidaemia. However, like in many parts of the world, other species (non-albicans) comprise >50% of BSI.3 Although, the reported antifungal resistance is less common in C. albicans,4 we observed a different profile from that usually described, with an alarming resistance to azoles.

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THE APPLICATION OF ARTIFICIAL INTELLIGENCE TO IMPROVE THE QUALITY OF VENTILATED PATIENTS

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INTRODUCTIONÂ Â Â Â

Critically ill patients admitted to intensive care unit (ICU) due to acute respiratory failure (ARF) with mechanical ventilator (MV), as the occurrence of ventilator-associated event (VAE) or ventilator-associated pneumonia (VAP), might have a poor prognosis. The application of quality improvement (QI) program with the aids of artificial intelligence (AI) could improve the outcome of those patients.

OBJECTIVESÂ Â Â Â

The study was conducted in a 19-bed medical ICU of a medical center in Southern Taiwan. An interdisciplinary team initiated the weaning protocol with a four-step mobilization program within 72 hours of MV when patients become hemodynamically stable. With the integration of AI, ventilator clouds and Clinical Informatics Systems (CIS) with computer transformation of vital signs surveillance, we could safely monitor patients with MV weaning.

METHODSÂ Â Â Â

Before endotracheal removal, we applied weaning APP (Chi-Mei extubation Scores 8) based on our previous 3602 patients' data via the train and test from an artificial neural network (ANN). We inputted 8 items to predict the possibility of liberation from MV within 72 hours. We wanted to compared the outcome (ICU stays, VAE rate and hospital costs) before (Jan 1 to March 31, 2018) and after QI (Nov 1 to Dec 31).

RESULTSÂ Â Â Â

Before QI, the mean ICU stays were 12.0 days, with a VAE rate of 14.6 ‰ and an average hospital cost of 350,000 New Taiwan Dollars (NTD). After QI, the ICU stays, VAE rate and hospital costs were down to 8.7days, 0 and 190,000 NTD. The extra nursing hours also decreased from 312 to 56 hours per month.

CONCLUSIONÂ Â Â Â

The integration of QI, AI, ventilator clouds and CIS can improve the quality and outcome of ARF patients with MV1-2. We will apply the successful experiences to the other ICUs in our hospital, and may serve as a benchmarking for other hospitals in Taiwan.

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DISPATCHER-ASSISTED CARDIOPULMONARY RESUSCITATION (DACPR) IN ELDERLY NON-URBAN AREA, A TAIWAN RURAL COUNTRY BASED STUDY

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INTRODUCTIONÂ Â Â Â

Emergency Medical Service (EMS) has been promoting Dispatcher-Assisted Cardiopulmonary Resuscitation (DACPR) nationally for 2-3 years in Taiwan since 2017. We evaluate the performance of DACPR in the third most elderly population country, Nantou, Taiwan.

METHODSÂ Â Â Â

This is a retrospective observational study based on EMS dispatch records. We estimated the proportion of confirmed Out-of-Hospital Cardiac Arrest (OHCA) patients recognized by the dispatchers during emergency calls, and the proportion of OHCA patients who received chest compression from bystanders before medical technicians' arrival on the scene. Time intervals between dispatchers taking the call to address acquisition, taking the call to OHCA recognition, and taking the call to the starting time point of chest compression were calculated in the study.

RESULTSÂ Â Â Â

After excluding missing/incomplete cases in the dataset, 705 OHCA cases during January 2018 to October 2019 were enrolled for further analysis. The recognition proportion of confirmed OHCA patients was 71.35% (503/705). Among confirmed recognition cases, the proportion of recognition time interval within 120 seconds were 86.28% (434/503). The proportion of chest compression from bystander was 54.87% (276/503), of them, only 39.96% (201/503) chest compression were started within 180 seconds from dispatcher taking the call. In addition, the medians of time intervals from dispatchers taking the call to address acquisition, OHCA recognition, and OHCA patients receiving chest compression from bystanders were 14 seconds, 37 seconds and 124 seconds, respectively.

CONCLUSIONÂ Â Â Â

A well-trained dispatcher in rural area could recognize OHCA cases quickly. However, time consumption occurred on dispatchers guiding bystanders to perform chest compression in Taiwan rural country even though the education on bystanders' chest compression has been promoting around a decade and even much earlier than DACPR. The potential factors of delay on chest compression needs to be further evaluation.

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AN EXTERNAL VALIDATION OF SCORING SYSTEMS IN MORTALITY PREDICTION IN VV ECMO

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INTRODUCTIONÂ Â Â Â

Veno-venous extracorporeal membrane oxygenation (VV ECMO) offers the last resort in treatment of Acute Respiratory Distress Syndrome (ARDS). Various scoring systems have been established yet validation of these scoring systems in Asian population remained scarce.

OBJECTIVESÂ Â Â Â

To identify predictors of hospital mortality and validate various scoring systems in prediction of hospital mortality

METHODSÂ Â Â Â

A retrospective analysis of adults admitted to Pamela Youde Nethersole Eastern Hospital intensive care unit and received VV ECMO from 1st Jan 2010 to 30th June 2019 was performed. Demographics, ventilation strategy, rescue therapies and clinical outcomes were compared. Primary outcome was hospital mortality and secondary outcome were ICU mortality, ICU and hospital length-of-stay.

RESULTSÂ Â Â Â

There were 122 VV ECMO performed for ARDS, 78 survived and 44 died. VV ECMO put for viral pneumonitis was significantly associated with better survival (43 vs 11, p=0.001) compared with other causes. Other invasive organ supports and rescue therapies i.e. prone ventilation and neuro-muscular blockade were insignificant for hospital mortality. As for prediction scores, PRESET score had an area under the receiver operator curve (AUROC) of 0.733(95% CI 0.643-0.823) while that of PRESERVE score was 0.662 (0.561-0.764), RESP score was 0.657 (0.553-0.761), SOFA score was 0.652 (0.547-0.757) and VV ECMO mortality score was 0.637 (0.532-0.742). Combination of PRESET score and PRESERVE score improved the hospital mortality prediction with AUROC 0.768 (0.68-0.856).

CONCLUSIONÂ Â Â Â

In our cohort, VV ECMO put for viral pneumonitis was associated with a higher hospital survival. Prediction scores were helpful in our population and PRESET score provides a useful reference to hospital mortality.

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EARLY EPIDEMIOLOGICAL ANALYSIS OF THE RISK OF DEATH IN 2019 NOVEL CORONAVIRUS DISEASE (COVID-19) IN HUBEI PROVINCE

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INTRODUCTIONÂ Â Â Â

The current outbreak of novel coronavirus (SARS-CoV-2) in China and globally requires urgent research to guide the appropriate treatment of patients with coronavirus disease 2019 (COVID-19).

METHODSÂ Â Â Â

We conducted a case-control study to the evaluate risk factors of death among patients with COVID-19 in Hubei Province in January, 2020. We used published data of cases from Huanan Seafood Market, Jinyintan Hospital, and deaths publicly released by the Government. The study included 41 patients partially exposed to the Huanan Seafood Market, 99 patients from Jinyintan Hospital, and 32 deaths (COVID-19 death group) in Hubei Province in January, 2020.

RESULTSÂ Â Â Â

Compared to cases in the Huanan Seafood Market group and Jinyintan Hospital group, cases from the COVID-19 death group were older, with an earlier onset of dyspnea, as well as more comorbidities, shortness of breath, confusion, and chest pain. In the COVID-19 death group, patients that died within 14 days of the onset of the illness were older than patients that died after 14 days. Patients were more likely to be in the COVID-19 death group if they were older [odds ratios (OR) 26.0], had any comorbidity (OR 4.7), hypertension (OR 3.5), cardiovascular disease (OR 5.1), endocrine system disease (OR 3.5), and respiratory system disease (OR 18.1). These patients exhibited the following symptoms: shortness of breath (OR 11.8), confusion (OR 3.3), chest pain (OR 29.1), and fever + cough + shortness of breath (OR 4.4).

CONCLUSIONÂ Â Â Â

Old age, medical comorbidities, dyspnea, confusion, and chest pain at admission are associated with a higher risk of death in patients with COVID-19 in Hubei Province in January, 2020.

ANALYTIC MORPHOMICS PREDICT OUTCOMES IN PATIENTS WITH ACUTE RESPIRATORY DISTRESS SYNDROME

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INTRODUCTIONÂ Â Â Â

Acute respiratory distress syndrome (ARDS) causes high morbidity and mortality rate in critically ill patients in intensive care units. CT scoring system derived from lung zones and visual estimation of lung severity scores to get a prognostic value in ARDS. However, the scoring system is both complicated and time consuming in daily clinical practice. Analytic morphomics is a novel method using semiautomated image processing to quantitate various aspects of body composition from CT imaging.

OBJECTIVESÂ Â Â Â

The object of this study was to explore the survival predictors of patients with ARDS by using analytic morphomics.

METHODSÂ Â Â Â

The study reviewed adult patients with ARDS with mechanical ventilation between January 2012 and December 2015. Patients with acute respiratory distress syndrome underwent chest CT were included in the study. Analytic morphormic was applied to analyze the data.

RESULTSÂ Â Â Â

Seventy-three patients with acute respiratory distress syndrome were included in the study. Analytic morphomics was used to and we found the intensity inside central bone core (bmdhuvbaligned) and the cross sectional area of the dorsal muscle group (dmgexpmarea) were associated the hospital mortality in the patients with ARDS. The AUC of PaO2/FiO2 ratio, APACHE â…¡ score, and bmdhuvbaligned was 0.84.

CONCLUSIONÂ Â Â Â

The result showed that analytic morphomics is useful to predict the outcome of patients with ARDS.

CLASSIC IMAGE OF PERIRENAL AIR CAUSED BY VENTILATOR-INDUCED ALVEOLAR RUPTURE

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INTRODUCTIONÂ Â Â Â

Mechanical ventilation is a rare cause of pneumoretroperitoneum and occurs when air from the thoracic cavity travels along the esophagus and aorta into the retroperitoneum under high intrathoracic pressure.

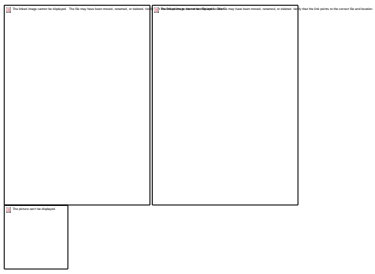
METHODSÂ Â Â Â

We present a classic image of pneumoretroperitoneum showing perirenal air on chest X-ray (CXR), which was caused by ventilator-induced alveolar rupture in a woman with acute respiratory distress syndrome (ARDS).

RESULTSÂ Â Â Â

A 31-year-old woman with Sjögren syndrome presented to the emergency room with a 3-day history of fever up to 40.1°C, diarrhea, and skin rash. Lab data demonstrated a leukocyte count of 4,800 per μL with a differential count of 86% neutrophils and elevated CRP (3.31 mg/dl). CXR showed bilateral alveolar pattern. Meropenem, levofloxacin, and teicoplanin were prescribed for severe pneumonia. Sevatrium and ganciclovir were added for atypical pathogens. Methylprednisolone 0.6mg/kg was infused for suspected flare up of autoimmune disease (ANA 1:2560, anti-RNP 32 U/ml, and SS-A 12 U/ml). On hospital day 13, she was intubated and mechanically ventilated for ARDS (PaO2 123 mmHg under PEEP 12 and FiO2 0.85). She was given muscle relaxants and moved to the prone position. On hospital day 21, her oxygenation declined under airway pressure release ventilation (FiO2 0.9, tidal volume 6-8ml/kg, and peak inspiratory pressure (PIP) 33 cmH2O). CXR revealed right pneumothorax, pneumomediastinum, and bilateral perirenal air, indicating pneumoretroperitoneum (Fig 1). After chest tube insertion, the pneumothorax and pneumoretroperitoneum diminished (Fig 2). Extracorporeal membrane oxygenation was initiated for poor oxygenation. Pathogen assays were all negative. Lung biopsy revealed fibrotic interstitial pneumonia. She died of prolonged ARDS on hospital day 39.

Pneumoretroperitoneum is mostly caused by perforation of the retroperitoneal hollow organs. This damage can be pathologic, such as in peptic ulcer disease, diverticulitis, trauma, and neoplasm, or iatrogenic, for instance during colonoscopy(1). Ventilator use is a rare cause, but air may leak from the ruptured alveoli to the pleural space and mediastinum under high intrathoracic pressure, then dissect into the retro-peritoneum along the fascial planes surrounding the esophagus and aorta or through small weaknesses in the diaphragm(2). Large tidal volume, high peak airway pressure, and high PEEP may result in alveolar rupture; however, unequal lung hyperventilation may be a more important factor to development of extra-alveolar air leaks (2,3,4).



CONCLUSIONÂ Â Â Â

This is the first reported image of pneumoretroperitoneum in which the entire bilateral kidneys were enhanced by air-contrast. Misdiagnosis may result in unnecessary exploratory laparotomy and delay appropriate management (4,5,6).

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THE PROGRAM OF PROMOTION ON EMERGENCY AND REFERRAL QUALITY IMPROVES THE PATIENT FLOW IN OVERCROWDING EMERGENCY DEPARTMENT

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INTRODUCTIONÂ Â Â Â

The Ministry of Health and Welfare carried out the program of promotion on emergency and referral quality based on the patient's place of residence, the flow of medical service, and the level of emergency medical capabilities of the hospital since 2013. In Taiwan, 193 hospitals were planned as 14 emergency referral networks in 2015. The hospital with high-level medical responsibility is the base of network and integrates the hospitals with medium-level and general-level medical responsibility in its network to provide emergency patients with upward, parallel, and downward referral services. In the overcrowding emergency department (ED), the case-management assistant will provide the referral service of emergency patients and hold regular network meetings to review the implementation status and improve the quality on the referral service of emergency patients. Taichung Veterans General Hospital (TCVGH) is the base of network and takes a high-level medical responsibility in the central Taiwan.

OBJECTIVESÂ Â Â Â

The aim of this study is to investigate emergency patients who had received the referral service and stasis for emergency observation more than 48 hours through the program of promotion on emergency and referral quality in the ED between Jan 2017 and Dec 2019.

METHODSÂ Â Â Â

We conducted a hospital-based retrospective study of emergency patients who had received the referral service and stasis for emergency observation more than 48 hours in the ED. Data were collected from the electronic clinical database of TCVGH between Jan 2017 and Dec 2019. Demographics and clinical characteristics of emergency patients were collected for analysis.

RESULTSÂ Â Â Â

Of all, 1916 emergency patients who had received the referral service were enrolled in this study, including 1057 (55.2%) males and 859 (44.8%) females. The emergency patients were 560 in 2017, 618 in 2018, and 738 in 2019. The most common referral service was infectious disease of 649 patients (33.9%) and gastrointestinal disease of 316 patients (16.5%). The annual rates of emergency patients who had stasis for emergency observation more than 48 hours were 3.02%, 2.72%, and 2.61% in 2017, 2018, and 2019, respectively.

CONCLUSIONÂ Â Â Â

The emergency patients who had received the referral service were increased and the annual rates of emergency patients who had stasis for emergency observation more than 48 hours were decreased from 2017 to 2019. The program of promotion on emergency and referral quality had improved the patient flow in overcrowding emergency department.

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DEEP-LEARNING ASSISTED DIAGNOSIS FOR ACUTE RESPIRATORY DISTRESS SYNDROME USING PLAIN CHEST RADIOGRAPHS

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INTRODUCTIONÂ Â Â Â

Acute respiratory distress syndrome (ARDS) is a severe lung condition that causes hypoxemia, which relies on the assessment of symptoms and evaluation of chest radiographs (CXR) for an accurate diagnosis. Deep learning algorithms have been proven useful to detect lung pathologies such as nodules and pneumothorax.

OBJECTIVESÂ Â Â Â

This study presents a new computer-aided diagnosis method based on deep learning to detect ARDS on portable supine CXR.

METHODSÂ Â Â Â

Our dataset consisted of 2351 portable anterior-posterior CXR in 164 ARDS patients and 3112 CXR in 1297 non-ARDS patients performed at eight intensive care units of Chang Gung Memorial Hospital from January 2013 to December 2014. The diagnoses of ARDS were confirmed by two board-certified pulmonologists. Per patient random data split was conducted with 80% for training and validation and 20% holdout for testing purposes. Lung fields were segmented by Unet++ model of which cropped images were augmented before feeding into a classification model based on the Google Efficientnet.

RESULTSÂ Â Â Â

The mean age of ARDS patients was 62.01±15.27 years compared to 61.22±14.94 years in non-ARDS patients ($p = 0.52$). The model performance achieved an average area under the receiver operating characteristic curve (AUC) of 0.814 and resulted in a sensitivity of 61% and specificity 85%. The PPV and NPV are 0.75 and 0.95, respectively.

CONCLUSIONÂ Â Â Â

Deep-learning algorithms can aid in the interpretation of CXR findings in patients with ARDS. External validation studies are necessary to confirm the generalizability of our deep learning model across populations and image modalities.

DISTRACTIVE AUDITORY STIMULI IN THE FORM OF MUSIC DURING PULMONARY REHABILITATION IN PATIENTS POST LUNG TRANSPLANTATION

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INTRODUCTIONÂ Â Â Â

For lung transplantation patients, pulmonary rehabilitation (PR) can improve preoperative and postoperative cardiopulmonary function1,2. The individual exercise program is designed after thorough assessment by a respiratory therapist. The effectiveness of PR will be evaluated regularly to revise the exercise program for optimal benefits. Distractive auditory stimuli (DAS) in the form of music has been applied to different clinical situations3,5. The previous study pointed out that DAS of music therapy can inhibit the sympathetic nerves, reduce the secretion of epinephrine while stimulating the limbic system of the brain and produce a sense of pleasure, improve the symptoms of depression, anxiety4. However, there is scarce study to focus on the effectiveness of DAS in the lung transplantation patients.

OBJECTIVESÂ Â Â Â

This study is designed to assess the effect of distractive auditory stimuli of music therapy during the exercise training on lung transplantation patients.

METHODSÂ Â Â Â

Patients received lung transplantation and agreed to participate this study will be enrolled. The subjects performed three pulmonary rehabilitation exercises without music stimulation, and three pulmonary rehabilitation exercises with music stimulation, each training interval should be more than one day. According to the rotation speed of the patient's ergometer during exercise, the music is divided into slow (80-100bpm/min), medium (100-120bpm/min) and fast (more than 120bpm/min) music according to the beat speed. The physiological parameters including respiratory rate, heart rate, blood pressure, pulse oximeter, Borg scale, exercise distance, workload, end-tidal CO2(EtCO2) and the SF-36 were recorded before and after exercise. Statistical tools to statistical tools to SPSS 26.0 version. The pair *t* test and Wilcoxon test were used to analyze the differences between the subjects with and without musical stimulation.

RESULTSÂ Â Â Â

Total of 16 patients were enrolled. The results showed that most of their physiological parameters such as heart beat, blood pressure, and EtCO2 â€‹â€‹were not significantly different before and after intervention. The Borg scale has a trend of decrease but no statistically significant. There

was also no difference in exercise distance between the two groups. In the aspect of quality of life, DAS in the form of music can really improve their vitality state.

CONCLUSIONÂ Â Â Â

Lung transplantation may improve the pulmonary function but the procedure possibly affect the function of respiratory muscles and quality of life1,2. Pulmonary rehabilitation can improve and maintain exercise capacity post lung transplantation3.4. In this study, we found that intervention of distractive auditory stimuli of music therapy during pulmonary rehabilitation may further improve the patient's vitality status.

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6. NO

INTRAHOSPITAL TRANSPORT OF MECHANICALLY VENTILATED INTENSIVE CARE PATIENTS: AN OBSERVATIONAL STUDY

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INTRODUCTIONÂ Â Â Â

Critically ill patients often require mechanical support. The process of transfer mechanically ventilated intensive care patients are vulnerable to severe complications owing to critically ill conditions. However, there may be some situations when the patient has to be transported to radiology department. In order to reduce overall risk to the patient, such transports should well have organized, efficient, and accompanied by the proper monitoring, equipment, personnel and adequate limited transfer time.

OBJECTIVESÂ Â Â Â

Patients' outcome after intensive care unit (ICU) transfer reflect hospital's post-ICU care status. Our study assessed association that intrahospital transfer time of the critically ill transfer on patient outcome.

METHODSÂ Â Â Â

We retrospectively reviewed all patients admitted to a medical-surgical intensive care unit at a single center in Taiwan between July 1, 2019 and February, 2020; excluded against advise discharge patients. The mechanically ventilated intensive care patients who need to be transport to radiology department(RD), we compared the time patients left of the ICU and analyzed all intrahospital transfer time in relation to ICU mortality rate, length of stay, ventilator days and hospital outcomes.

RESULTSÂ Â Â Â

Of 111 patients admitted during study period, 103 were eligible for study, a total of 157 inspections to RD were conducted, with an average of 35.1 minutes each time, our study demonstrated even more than once transport, the total time to leave the ICU exceeds 60 minutes, the ICU length days was significantly higher than smaller than 60 minutes (p= 0.045), although

the mortality rate, ventilator days was no statistical difference, exceed 60 minutes group still have higher performance than the other group.

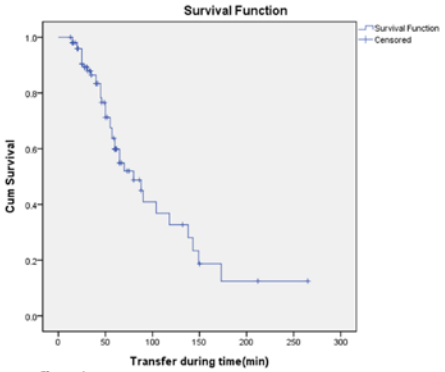

Figure.1

CONCLUSIONÂ Â Â Â

The intrahospital transfer time of the critically ill is a big issue with important implications for intensive care unit quality, all of clinical medical staff should do our best to shorten the time patients are left of the ICU.

INCIDENT REPORTING DURING THE COVID-19 CRITICAL CARE SURGE

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INTRODUCTIONÂ Â Â Â

Incident reporting to facilitate learning from clinical errors is a key factor in maintaining patient safety in the NHS (1). The COVID-19 pandemic imposed unprecedented pressure on NHS services. Imperial College NHS trust made a number of rapid changes particularly in expanding Critical Care capacity to accommodate this sudden surge particularly over February to May 2020. However, despite increased clinical activity over this time it was noted there was, paradoxically, a fall in Incident reporting too, which we sought to investigate.

OBJECTIVESÂ Â Â Â

1) To investigate the trend in overall Patient Safety incidents reported from February to May 2020 and their breakdown according to directorate and incident type; 2) To report on how clinical activity changed during this period in comparison to the number and type of Patient Safety Incidents, with special focus on Critical Care; 3) To offer possible explanations for this and how we might improve reporting practice should there be a second COVID-19 surge.

METHODSÂ Â Â Â

The number of incident reports submitted during this time were kindly supplied by the Trust’s Quality and safety team, and compared to levels of clinical activity- which were obtained by the site team

RESULTSÂ Â Â Â

The first cases of COVID-19 appeared in the UK in Feb 2020. National death rates from the disease then increased until their peak on the 30th April before slowly declining (2). Bed occupancy, particularly in Critical Care increased significantly during this time, by 83% from March to April, whilst Surgical activity and Major Trauma levels fell. Incident reporting rates in all directorates fell from early March to their lowest level in early April before starting to recover by mid May. There was a fall in incidents classified as moderate harm and above- including those encompassing patient safety incidents, medication incidents and, initially, pressure ulcers whilst COVID related incidents (of which in 95% of cases were classified as low or no harm) rose significantly over the same period.

CONCLUSIONÂ Â Â Â

Our results suggest that overall incident reporting rates fell during the Pandemic and did not accurately mirror clinical activity, particularly in Critical Care. The pandemic represented a time

of great pressure and change. Critical Care expanded to provide ventilators in previously unused areas and theatre recovery areas, re-deployed new medical and nursing staff from outside specialties and implemented more intense rotas. It is unlikely therefore the rate of actual incidents fell, but more likely that they were under-reported. Reasons for this could include the fact that staff were under greater pressure and fatigue, distracted by the wider issues of the pandemic, in unfamiliar working environments, without comprehensive clinical guidelines, less familiar with reporting processes and often donned in uncomfortable PPE at the times where incident reports required submission. The rise in COVID related incident reports at this time (which were largely low risk infection issues) may have distracted staff from reporting other safety concerns. We propose that ensuring all staff (including those re-deployed) are educated on how and why to incident report, attempting to simplify the process, providing more clinical guidelines on COVID-19 and ensuring staff feel reports are acted on, may be ways of improving this practice during such challenging times.

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THE ASSOCATION OF END STAGE RENAL DISEASE AND LONG TERM OUTCOME IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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INTRODUCTIONÂ Â Â Â

Although a possible association between chronic kidney disease and coronary artery disease or acute myocardial infarction has been identified, the impact of end-stage-renal-disease (ESRD) under dialysis on long-term prognosis after an acute myocardial infarction (AMI) is uncertain. Therefore, this study was to evaluate the specific impact of the patient with ESRD under dialysis on survival after a first AMI through a retrospective analysis of data from the Taiwan National Health Insurance Research Database.

METHODSÂ Â Â Â

This was a nationwide, propensity score-matched case-control study of patients admitted to hospitals between January 2000 and December 2012 with a primary diagnosis of a first AMI. Among the 186,326 prospective patients, 8056 patients with a confirmed diagnosis of ESRD under regular dialysis were identified. A propensity score, one-to-one matching technique was used to match 8056 controls to the AMI group for analysis. Controls were matched on the following variables: sex, age, hypertension, dyslipidemia, diabetes, peripheral vascular disease, heart failure, cerebrovascular accidents, end stage renal disease, chronic obstructive pulmonary disease, and percutaneous coronary intervention.

RESULTSÂ Â Â Â

The 12-year survival rate was significant lower in AMI with ESRD group than control group (log rank $p<0.01$). No matter male or female, the survival rate was significant lower in AMI with ESRD group (log rank $p<0.0001$). In both younger (Age<65 years) and older category, the survival rate was also lower in AMI with ESRD group (log rank $p<0.0001$). The survival rate of patients who had received PCI management was comparable among patients in the ESRD and control groups (log rank $p < 0.0001$).Similarly, the rate of survival among patients who did not receive PCI management was comparable for both the ESRD and control groups (log rank $p <0.001$).

CONCLUSIONÂ Â Â Â

In this nationwide study, using matched-case control we provide evidence of a possible effect of end-stage-renal-disease on the survival after a first AMI. Independent of sex and age, and

revascularization management, ESRD plays an important role in the long-term outcome of AMI patients.

e-Posters

SHARED DECISION MAKING IMPACT ON EARLY TRACHEOSTOMY IN PROLONGED INTUBATED CRITICAL PATIENT- POST IMPLEMENTATION 2 YEAR FOLLOW UP DATA

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INTRODUCTIONÂ Â Â Â

By previous collected retrospective cohort data analysis, our team revealed introducing shared decision making on early Tracheostomy(less than 14 days) in prolonged intubated critical patient improve total Tracheostomy rate, reduce ventilator days and length of hospital stay, and shorten the Tracheostomy decision time delay.

METHODSÂ Â Â Â

Medical record of tertiary medical center adult ICU admitted respiratory failure patient from Jan. 1st, 2018 to Dec. 31th , 2019 was retrospectively reviewed as post-SDM(after Jan. 1st , 2017) intervention follow up period for analysis. Data including total Tracheostomy rate, early and late Tracheostomy rate, ventilator weaning rate and ventilator days, in-hospital mortality, and length of hospital stay of prolonged intubated patient were collected. SPSS was applied for statistically analysis, and a p-value less than 0.05 was considered significant difference.

RESULTSÂ Â Â Â

By inclusion and exclusion criteria, medical records from 366 patients from Jan. 1st, 2018 to Dec. 31th, 2019, who were considered prolonged intubated s/p Tracheostomy SDM, were applied for further analysis. Among them the early and late Tracehostomy rate was 41% and 69% individually. In compared to previous reported pre-SDM data, ventilator weaning rate(289(79.2%) vs. 89(69.3%), p< 0.05), ventilator days(39.3+/-20.5 vs. 42.3+/-17.3, p< 0.05), in-hospital mortality((10.3%) vs. 7(3.3%), p: 0.737), and length of hospital stay(61.2+/-23.4 vs. 64.3+/-29.2, p: 0.04) of prolonged intubated patient. The continued impact on introducing SDM was impressed, with improving ventilator weaning rate, reduced ventilator days, and shortening the length of hospital stay of prolonged intubated patient by 3 days for each in compared in between groups. The Tracheostomy decision making time delay was found 6 days less after SDM introduced was also consistently noted.

CONCLUSIONÂ Â Â Â

Our retrospective cohort study follow-up data revealed introducing shared decision making on early Tracheostomy in prolonged intubated critical patient persistently improve total Tracheostomy rate, improve ventilator weaning rate, reduce ventilator days and length of hospital stay, and shorten the Tracheostomy decision time delay.

THE IMPACT OF SACUBITRIL/VALSARTAN ON OUTCOMES IN CRITICAL PATIENTS WITH POST MI ANGINA

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INTRODUCTIONÂ Â Â Â

Heart failure is currently one of the major public health issues. The prevalence of heart failure has been increasing in the last decades due to the increased survival rate after primary percutaneous coronary intervention. As we known, coronary artery disease is one of the leading causes of death and heart failure is one of the most common complications in patients that survived after acute myocardial infarction. However, there were still limited publications about long-term outcomes of sacubitril/valsartanin post-myocardial infarction heart failure patients in Taiwan. The aim of this study is to compare the long-term outcome of sacubitril/valsartan in heart failure with reduced ejection fraction (EF) patient with or without previous myocardial infarction.

METHODSÂ Â Â Â

The data of consecutive patients received sacubitril/valsartan in patients with heart failure with reduced EF was collected from 2016 to 2018. Total of 192 patients with heart failure with reduced EF included in this study. The patients were divided into two groups: control group (N = 148) and with previous myocardial infarction group (N=44).

RESULTSÂ Â Â Â

The male ratio was 69.59% in control group (N=148) and 86.36% in patients with previous myocardial infarction group (N=44).The patients in control groups were older than previous myocardial infarction groups (62.78±15.49 vs 65.62±13.98) There was no difference of BNP (1629.4±2290.9 vs 1233.7±1453.7 pg/ml; p=0.429) and high-Sensitivity CRP (4.46±6.32 vs 4.34±5.47 mg/dl, p=0.942) between control vs previous myocardial infarction groups.During 2 years follow up, there was no difference of heart failure re-admission (1.35% vs 2.27%, p=0.655),stroke (0.68% vs 0%, p=0.548), re-myocardial infarction (0.68% vs 2.27%, p=0.355), cardiac death (4% vs0%, p=0.27), non-cardiac death (3.38% vs 2.27%, p=0.711) between heart failure patient with or without previous myocardial infarction.

CONCLUSIONÂ Â Â Â

This 2year follow up study demonstrated that sacubitril/valsartan, in both heart failure patients with and without previous myocardial infarction, had low re-myocardial infarction, stroke, heart failure readmission rate and all cause mortality.

A CASE REPORT OF ASCENDING AORTIC IABP INSERTION; ALTERNATIVE TO RETROGRADE FEMORAL ROUTE

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INTRODUCTIONÂ Â Â Â

There is an alternative route for insertion of IABP in cardiac surgical patients undergoing sternotomy if the conventional retrograde trans femoral route is not possible. Few indications are aorto-iliac occlusive disease and peripheral arterial disease. 1

OBJECTIVESÂ Â Â Â

Case report:

Sixty years old male diagnosed as recent anterior wall MI with severe left ventricular dysfunction. Echocardiography showed global hypokinesia, ejection fraction 20-25% and coronary angiography completely occluded left anterior descending artery(LAD). Patient underwent CABG on June 2015. Preoperative IABP insertion was attempted via right femoral artery. Inotrope and vasopressor were used at induction of anesthesia and venous graft to LAD. At the end of cardiopulmonary bypass, we were unable to wean the patient so a saphenous vein graft was used as an access conduit for IABP through the ascending aorta. IABP placed using Seldinger's technique and left subclavian artery pinched to facilitate direction as recommended by Santini. 2

Patient was followed up after a year with CT Angiography of the coronary arteries which showed patent graft to LAD and conduit graft used for IABP insertion was thrombosed.

METHODSÂ Â Â Â

-  insertion of IABP through the vein graft

RESULTSÂ Â Â Â

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CONCLUSIONÂ Â Â Â

Transthoracic IABP is a useful alternative when transfemoral insertion fails. Being a second choice 3 and a more invasive treatment, transthoracic IABP is associated with increased mortality.4

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THE USE OF QRS DURATION IN PREDICTING OUTCOMES IN CARDIAC ARREST SURVIVORS WITH TARGETED TEMPERATURE MANAGEMENT

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INTRODUCTIONÂ Â Â Â

Much effort has devoted into post-cardiac arrest care and into prognostication of outcomes in cardiac arrest survivors. The ECG at return of spontaneous circulation (ROSC) has been reported to be associated with outcomes in cardiac arrest survivors. However, whether the ECG characteristics and serial change can predict outcomes in cardiac arrest survivors with target temperature management (TTM) remains unclear.

OBJECTIVESÂ Â Â Â

To evaluate whether QRS duration before and after TTM can be used to predict survival outcome in cardiac arrest survivors with therapeutic hypothermia

METHODSÂ Â Â Â

The retrospective observational enrolled cardiac arrest survivors who received TTM in a tertiary transfer center during the period from 2006 to 2018. The baseline characteristics, CPR events and ECG characteristics (at ROSC, during hypothermia, and after rewarming) between patients with and without survival to hospital discharge were compared.

RESULTSÂ Â Â Â

A total of 295 cardiac arrest survivors with TTM were finally included in the current study. The patients who cannot survive to hospital discharge had longer QRS durations as compared with ones survived to hospital discharge at ROSC (118.33±32.47 v.s. 106.88±29.78, p<0.001) and after rewarming (99.26±25.07 v.s. 93.03±19.09, p=0.008). After multiple logistic regression, the QRS duration at ROSC and after rewarming were associated with survival to hospital discharge. The optimal cut-off-value of QRS duration in predicting survival was 113 ms at ROSC, 103 ms after rewarming at narrow QRS group, and 136 ms at wide QRS group by ROC curve. Based on cut-off-values of the QRS durations, the enrolled patients were re-classified the enrolled patients into narrow-narrow (n=156), narrow-wide (n=29), wide-narrow (n=87), wide-wide (n=23) groups. Compared with the narrow-narrow group, the wide-wide group had the worst survival (OR 0.141, P=0.001), followed by the narrow-wide group (OR 0.223, P=0.003) and wide-narrow group (OR 0.389, P=0.001).

CONCLUSIONÂ Â Â Â

In cardiac arrest survivors with TTM, QRS durations at ROSC and after rewarming may help in predicting survival to hospital discharge.

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VAGAL MANEUVERS FOR SUPRAVENTRICULAR TACHYCARDIA: A SYSTEMATIC REVIEW AND NETWORK META-ANALYSIS

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INTRODUCTIONÂ Â Â Â

Vagal maneuvers, which was recommended as the first line treatment of supraventricular tachycardia, can be performed in many ways, including standard Valsalva maneuver (sVM), modified Valsalva maneuver (mVM), carotid sinus massage (CSM), ice packing or the use of pneumatic anti-shock garment (PASG). However, previous studies comparing their effectiveness had shown divergence.

OBJECTIVESÂ Â Â Â

Our study aimed to verify the effectiveness and side effects of different vagal maneuvers on supraventricular tachycardia by performing a systemic review and network meta-analysis.

METHODSÂ Â Â Â

We systematically searched PubMed, Web of Science, Embase, Cochrane Library and Airiti Library to include every clinical trials investigating the use of a non-invasive maneuvers in adult patients with SVT. A network meta-analysis with a frequentist approach was performed to identify the specific maneuver with the highest odds of conversion to sinus rhythm and the least side effects.

RESULTSÂ Â Â Â

Seven studies including 1,243 patients in 16 treatment arms were enrolled in the study of conversion rate and 5 different vagal maneuvers, sVM, mVM, CSM, ice packing and PASG were compared. The mVM had a significantly higher conversion rate than the sVM (odds ratio [OR]: 4.88, 95% confidence interval [CI] 3.29-7.25) and was ranked as the highest probabilities of best treatment by the surface under the cumulative ranking curve (SUCRA, 91.5%). Five studies included 4 vagal maneuvers, the mVM, sVM, ice packing and PASG, were analyzed for side effects. The mVM had significantly higher risk of side effects compared to the sVM (OR: 2.00, 95% CI 1.05-3.82). The sVM was ranked as the maneuver of least side effects by SUCRA (77.3%). However, side effects were mild and rare in all groups.

CONCLUSIONÂ Â Â Â

The mVM is the most effective way to reverse supraventricular tachycardia. The sVM owns the lowest side effect but the risk of side effects was low in all vagal maneuvers.

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REDUCED EFFECTS OF CARDIAC EXTRACORPOREAL SHOCK WAVE THERAPY ON ANGIOGENESIS AND MYOCARDIAL FUNCTION RECOVERY IN PATIENTS WITH END-STAGE CORONARY ARTERY AND RENAL DISEASES

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INTRODUCTIONÂ Â Â Â

Growing evidence have shown cardiac extracorporeal shock wave therapy (ESWT) improve clinical symptoms and cardiac function for patients with end-stage diffuse coronary artery disease (EnD-CAD) unsuitable for coronary interventions. However, little is known whether cardiac ESWT remains effective on symptomatic relief and improvement of left ventricular ejection fraction (LVEF) for the EnD-CAD patients with end-stage renal disease (ESRD).

METHODSÂ Â Â Â

This was a prospective case-control study. Between August 2016 and January 2019, a total of 16 subjects received cardiac ESWT for their EnD-CAD. They were divided into two groups according to ESRD or not, i.e., EnD-CAD group (n=8) and EnD-CAD/ESRD group (n=8). Clinical symptoms including angina and dyspnea, levels of circulating endothelial progenitor cells (EPC), LVEF, and adverse events were regularly followed up for one year to compare safety and efficacy of cardiac ESWT between the EnD-CAD patients with or without ESRD.

RESULTSÂ Â Â Â

All participants tolerated cardiac ESWT. The patients in both groups had significant improvement in angina and dyspnea at 1 year. However, the EnD-CAD/ESRD group did not have increase in either circulating EPC levels or LVEF 6 months after ESWT. In contrast, the EnD-CAD group had gradually improving levels of circulating EPC surface markers and LV systolic function. Notably, patients in the EnD-CAD/ESRD group suffered from high incidental clinical adverse events before and after enrollment into the cardiac ESWT study.

CONCLUSIONÂ Â Â Â

Cardiac ESWT could alleviate symptoms of angina and dyspnea but did not increase angiogenesis and LVEF for the EnD-CAD/ESRD patients. In light of neutral therapeutic effects and high incidence of unfavorable clinical events, application of ESWT in circumstance of ESRD is not suggested.

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conducted at Kaohsiung Chang Gung Memorial Hospital, a tertiary medical center, and supported by a program grant from Chang Gung Memorial Hospital and Chang Gung University (grant numbers: CRRPG8F0511 [1/3], CRRPG8F0512 [2/3], CRRPG8F0513 [3/3]).

FACTORS ASSOCIATED WITH SUCCESSFUL WEANING FROM VENO-ARTERIAL EXTRACORPOREAL MEMBRANE OXYGENATION IN PATIENTS WITH CARDIOGENIC SHOCK COMPLICATING FULMINANT MYOCARDITIS: A RETROSPECTIVE COHORT ANALYSIS

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INTRODUCTIONÂ Â Â Â

Myocarditis is a potentially life-threatening disease commonly caused by viral infection [1]. Veno-arterial extracorporeal membrane oxygenation (V-A ECMO) can be used to provide circulatory support in myocarditis patients who develop cardiogenic shock refractory to medical treatment [2,3]. The current study aims to identify factors associated with clinical outcomes in patients who had fulminant myocarditis and received V-A ECMO.

METHODSÂ Â Â Â

A retrospective cohort chart review was conducted in a single center from January 2013 to January 2020 to include 23 patients who were admitted to intensive care units (ICU) and were diagnosed with fulminant myocarditis requiring V-A ECMO. All patients received cardiac catheterization to rule out underlying coronary artery occlusion. Fulminant myocarditis was diagnosed by cardiologists.

RESULTSÂ Â Â Â

The median age of patients was 51 (41-59) years old; 61% were female. 4.3% of patients had non-occlusive coronary artery disease and 8.7% of patients had chronic kidney disease stage 3 or above. ECMO was successfully weaned off in 12 patients, bridged to left ventricular assist device (LVAD) in 2 patients, and bridged to LVAD then to cardiac transplant in 4 patients. Five patients did not survive. The in-hospital survival rate was 78.2%.

Patients who were weaned from ECMO support had a median duration of ECMO support of 6.5 (5-12) days and length of ICU stay of 18.5 (9.8-25) days. Patients who were successfully weaned from ECMO support, when compared to those who failed to wean from ECMO support, had higher median left ventricle ejection fraction (LVEF) [27.4 (17.4-44.3) versus 15 (12.2-20.7)%, p level= 0.034]; trend towards lower creatine kinase-MB (CK-MB) prior to ECMO support [60.8 (18.7-75) versus 118.3 (42.3-126.7) , p level= 0.094]; and trend toward lower highest CK-MB during hospitalization [60.8 (18.7-75) versus 110.2 (63-279.8) , p level= 0.078]. There was no statistical difference in age, gender, comorbidities, and Survival after Veno-Arterial ECMO (SAVE) score [1 (-7 to 3) versus -1 (-10 to 3), p level= 0.7] between the two groups.

CONCLUSIONÂ Â Â Â

V-A ECMO appeared to be an excellent modality to support patients with cardiogenic shock complicating fulminant myocarditis. Echocardiography and cardiac enzymes might provide prognostic information in the success of ECMO weaning. SAVE score [4], while being designed to predict clinical outcomes in patients with cardiogenic shock requiring V-A ECMO, might not be useful in this specific group of patients. Further large prospective studies are needed to establish predicting models of clinical outcomes in patients with fulminant myocarditis requiring V-A ECMO.

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THE INFLUENCE OF ATRIAL FIBRILLATION ON LONG TERM OUCTOME IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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INTRODUCTIONÂ Â Â Â

Myocardial infarction (MI) is a risk factor of stroke due to the possibility of cardiac emboli formation within left ventricle because of focal hypokinesia or akinesia after MI. Besides, the coexistent atherosclerosis change of cerebral arteries, which is the major risk of stroke, may alsooccur in patients with coronary heart disease.1, 2Atrial fibrillation (AF) is a well-known risk factor of stroke due to cardiac emboli formation in the left atrium (LA), especially within LA appendage, due to the loss of rhythmic contractility of LA.3The risk of stroke after MI in patients with or without AF may be different.The aim of this study was to evaluate the impact of AF on stroke in patients after first MI, through the retrospective analysis of data from the Taiwan National Health Insurance Research Database (NHIRD).

OBJECTIVESÂ Â Â Â

Both acute myocardial infarction (AMI) and atrial fibrillation (AF) are risks for stroke. The risk of stroke after AMI may be different in patients with or without AF. The aim of this study was to evaluate the impact of AF on stroke in patients after first AMI.

METHODSÂ Â Â Â

SettingRetrospective nationwide cohortstudy.

ParticipantsA total of 170,472 patients who had the primary diagnosis of first AMI between 2000 and 2012. Among them, 8,530 with AF was identified. Propensity score matching technique was used to match 8,530 patients without AF with similar ages and genders.

Primary and secondary outcome measures All patients were followed until stroke or 31 December 2012, whichever occurred first.Kaplan–Meier cumulative survival curves were constructed to compare stroke between AMI patients with and without AF.

RESULTSÂ Â Â Â

Overall, 12-year stroke rate was higher in patients with AF than without AF (log rank P-value < 0.001), including in different genders, agesor intervention subgroups. In patients with AF,those withpreexisted AF have higherstroke rates in male gender, agebelow65 years, and with interventionsubgroups thanthose with new-onset AF. In cox proportional-hazard regression

analysis, AF was an independent risk factor for stroke after first AMI (hazard ratio, 1.67; 95% confidence interval, 1.5-1.87).

CONCLUSIONÂ Â Â Â

AF significantly increased stroke risks after first AMI.In patients with AF, those with preexisting AF have higher stroke risks in male genders, ages below 65 years, and with interventions than those with new-onset AF.

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LONG TERM IMPACT OF SACUBITRIL/VALSARTAN IN CONGESTIVE HEART FAILRUE: EXPERIENCE FROM A SINGLE CENTER IN TAIWAN

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INTRODUCTIONÂ Â Â Â

The sacubitril/*valsartan* have been developed to improve long-term outcomes. However, there are still limited publications about long-term outcomes of sacubitril/*valsartan* in Asia. This study is to investigate the long-term outcome of sacubitril/*valsartan* in patients with congestive heart failure in a single tertiary medical center.

METHODSÂ Â Â Â

The data of consecutive patients received sacubitril/*valsartan* in patients with congestive heart failure was collected data from cardiovascular center a single tertiary medical center from 2016 to 2018.

RESULTSÂ Â Â Â

Total 197 cases were included during 2.5 years follow up with 73.6% male. The average age was 63.51 ± 15.14 and average BMI was 24.90± 4.46 kg/m2 The average BNP was 1517.27 ± 2083.59 pg/mL and high-Sensitivity CRP was 4.43 ± 6.06 mg/dL. The maximal average dosage of sacubitril/*valsartan* was 73.60 ± 38.06 mg. Left ventricular ejection fraction by cardiac echocardiography showed 33.90 ± 9.82% before and 38.78 ± 9.78% after sacubitril/*valsartan* ($p<0.05$). There were two patients suffered from myocardial infarction (1.02%) and three patients suffered from rehospitalization due to heart failure (1.52%). There was no patient suffered from stroke. The total mortality rate after sacubitril/*valsartan* treatment was 4.57% (N=9).

CONCLUSIONÂ Â Â Â

This study demonstrated that sacubitril/*valsartan* in patients congestive heart failure had low mortality, stroke, myocardial infarction and rehospitalization due to heart failure at long-term follow up in a single tertiary medical center.

e-Posters

THE EFFECT OF AIR POLLUTION ON INJURY SEVERITY AFTER ROAD TRAFFIC ACCIDENTS

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INTRODUCTIONÂ Â Â Â

Motorcyclists, bicyclists, and pedestrians are vulnerable to road traffic injury (RTI). Recent studies have found a set of negative impacts involving air pollution on human cognition and behavior.

OBJECTIVESÂ Â Â Â

Since cognitive and behavioral performances are highly related to RTI incidents that have risen in Taiwan, we conducted a multicenter study to analyze the association between air pollution and RTI severity among vulnerable road users (VRU).

METHODSÂ Â Â Â

Demographic and environmental information of the crash scenes was collected via police records. This information included the spatial information involving the crash scenes, time of the crashes, and the types of road users, and was linked to medical data of seven trauma centers in northern and southern Taiwan. We collected the weather and air pollution data of the crash scenes by matching the nearest air quality monitoring stations and weather stations with a geographical information system (GIS). The injury severity score (ISS) and hospitalization status were treated as the severity measures.

RESULTSÂ Â Â Â

Of 14,065 RTI patients, 2,811 (20.0%) sustained severe injury (ISS of ≥ 9) and 1,262 (9.0%) required hospitalization. The mean age was 37 years, and 54.8% of the patients were male. Multivariate logistic regression analyses showed that being aged 45-64 and ≥ 65 years (Odds ratios:1.38, 1.73; 95% confidence intervals: 1.22-1.55, 1.47-2.03), nighttime (1.42; 1.17-1.71), being a bicyclist (1.42; 1.14-1.76) or pedestrian (1.39; 1.18-1.64), temperature of 26â„ƒ to 29â„ƒ and > 29â„ƒ (1.27, 1.25; 1.12-1.44, 1.09-1.43), relative humidity 60-85% and >85% (1.26, 1.58; 1.11-1.42, 1.29-1.94), unhealthy air quality index (1.52; 1.23-1.88), and concentrations of PM2.5 > 25 μg/m3 (1.24; 1.02-1.50) were significant risk factors for having an ISS of ≥ 9. The road width (1.01; 1.01-1.02) also is associated with more risk. For hospitalization, being male (1.22; 1.07-1.39), aged 25-44, 45-64 and ≥ 65 years (1.71, 3.21, 4.95; 1.43-2.05, 2.68-3.83, and 4.00-

6.12) or a bicyclist (1.38; 1.04-1.82), as well as temperature 26â„ƒ to 29â„ƒ (1.21; 1.00-1.47), and a moderate or unhealthy air quality index (1.28, 1.80; 1.11-1.49, 1.44-2.25) were significant risk factors.

A higher level on the Glasgow Coma Scale (0.80, 0.73; 0.77-0.84, 0.69-0.76) and higher concentrations of nitrogen dioxide (NO2) (0.81, 0.68; 0.72-0.91, 0.56-0.83) are associated with lower risks of having an ISS of ≥ 9 and hospitalization.

CONCLUSIONÂ Â Â Â

Age was significantly related to severe RTI. Both the road user factors and weather factors could be adversely associated with more severe injury after road traffic accidents. Notably, some air pollutants were significant risk factors for having an ISS of ≥ 9 and hospitalization after RTI. Thus, further in-depth evaluation of these air pollution factors may yield valuable information for controlling RTI among VRU.

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THE PROTECTIVE EFFECT OF EICOSAPENTAENOIC ACID THRU OPENED A CA2+ INÏ¬,UX PATHWAY PHARMACOLOGICALLY DISTINCT FROM STORE-OPERATED CA2+ INÏ¬,UX IN MOUSE CEREBRAL CORTICAL ENDOTHELIAL CELLS

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INTRODUCTIONÂ Â Â Â

Eicosapentaenoic acid (EPA) is an omega-3 fatty acid with anti-inflammatory properties, protects endothelial cells (EC) from lipotoxicity, has been demonstrated to have beneficial effects in cardiovascular system and brain protection, but the detail molecular mechanism is unclear and how EPC affects EC Ca2+-signaling and other functions remain largely unexplored.

OBJECTIVESÂ Â Â Â

In this work, we investigated the pharmacological properties of EPA on mouse cerebral cortical endothelial cells (bEND.3 cells) as well as the influence of Ca2+-influx pathway.

METHODSÂ Â Â Â

Brain microvascular bEND.3 cells cultured for the study. Cytosolic Ca2+ in bEND was measured with Fura-2 method. Mitochondria membrane potential (MMP) measured by MMP-Assay Kit. Cell viability was measured By MTT-assay. The $p < 0.05$ were considered significant (ANOVA).

RESULTSÂ Â Â Â

Addition of 10 mM Ni2+ did not significantly affect EPA-triggered [Ca2+]i elevation, suggesting Ni2+ did not block Ca2+ entry. Ni2+ caused the drop in fluorescence at 340 and 380 nm wavelengths in Fura-2, implies that Ni2+ influx was a leakage but not EPA-elicited. Addition of 1 mM Mn2+ appeared to suppress EPA-triggered [Ca2+]i elevation. The fluorescence at both 340 and 380 nm dropped, the result suggests Mn2+ entry. We used a high concentration of EPA (100 lM) to cause more substantial Ca2+ release. When EPA was added to the cells in Ca2+-free bath, Ca2+ release was substantial and when CPA was added later, there was no more Ca2+ release. In another experiment, when CPA was added ï¬rst, a subsequent EPA treatment still caused further Ca2+ release. These results suggest the EPA-sensitive Ca2+ store was larger and encompassed the CPA sensitive one.

CONCLUSIONÂ Â Â Â

EPA caused Ca2+ release and Ca2+ Influx via unusual mechanisms in bEND.3 cells. Given the versatile health effects of EPA, it is interesting and important to study the Ca2+ signaling triggered by this fatty acid in EC and other cell types, whose Ca2+ responses to EPA are very different from those in EC.

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PREDICTING IN-HOSPITAL CARDIAC ARREST IN PATIENTS WITH SEPSIS: A NATIONAL COHORT STUDY

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INTRODUCTIONÂ Â Â Â

Little is known about the risk of in-hospital cardiac arrest (IHCA) among sepsis. We aim to determine the incidence and outcome of IHCA among patients with sepsis in a national database. In addition, we aim to determine the major risk factors associated with IHCA among sepsis patients.

OBJECTIVESÂ Â Â Â

The aim of this study is threefold. First, we aim to determine the incidence and major risk factors of IHCA among patients hospitalized with sepsis. Second, we seek to determine the long-term survival impact of IHCA on sepsis survivors. Lastly, we aim to investigate differential risks of IHCA among patients with different comorbidities.

METHODSÂ Â Â Â

We conducted a population-based cohort study based on the National Health Insurance Research Database of Taiwan (NHRID) between 2000 and 2013. Sepsis was identified by a diagnostic code algorithm that combined explicit ICD-9 CM codes for sepsis and other codes for six major organ dysfunction (Martin implementation). IHCA among sepsis patients was identified by the presence of cardiopulmonary resuscitation procedure during hospitalization course. We used the cumulative incidence competing risks (CICR) method to evaluate the risk factors of IHCA. The CICR model can account for competing risks of death. The survival impact of IHCA was analyzed with the Cox proportional hazards model. We used the inverse probability of treatment weighting to account for the imbalanced baseline covariates between two comparison groups.

RESULTSÂ Â Â Â

We identified a total of 20,022 patients with sepsis, of which 2,168 (10.8%) developed IHCA. The risk of IHCA increased with age and revised cardiac index. In the multivariate analysis, acute respiratory failure (OR: 3.12, 95%CI: 2.81,3.46), male gender (OR 1.36, 95%CI: 1.24,1.50), and diabetes (OR 1.20, 95%CI: 1.07,1.34) , age in 10-year category (OR 1.11, 95%: 1.00,1.23) were identified as independent risk factors for post-sepsis IHCA. Patients who survive IHCA have long term adverse effects on survival. Compared with patients who did not experience IHCA, patients with IHCA were associated with increased risk of mortality at 1 year following hospital discharge (IPTW-weighted HR 5.19, 95%CI: 5.06, 5.35). In subgroup analysis, the adverse impact of IHCA was more profound in patients younger than 75 years old,

having no cancer, DM, and not complicated with acute respiratory failure, or lower respiratory tract infection (Interaction $P<0.05$).

CONCLUSIONÂ Â Â Â

IHCA in sepsis patients has a negative effect on both short-term and long-term survival. Risk of IHCA among hospitalized sepsis patients is highly correlated with age and revised cardiac index. The four identified risk factors can help clinicians to identify patients at higher risk for IHCA.

KEFIR PEPTIDES ATTENUATES HIGH CHOLESTEROL DIET-INDUCED ATHEROSCLEROSIS AND BONE LOSS BY REDUCING OXIDATIVE STRESS AND SYSTEMIC INFLAMMATION IN APOLIPOPROTEIN E KNOCKOUT MICE

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INTRODUCTIONÂ Â Â Â

Cardiovascular disease and osteoporosis represent the important causes of morbidity and mortality worldwide. The two diseases were traditionally considered independently related with aging, but recent studies revealed there is a significant positive correlation between them. Dyslipidemia, hypertension, type 2 diabetes, smoking, alcohol consumption, physical activity, menopause and aging are important risk factors for both of them. Most guidelines recommend adequate calcium intake for prevention and treatment of osteoporosis but calcium supplements may accelerate vascular calcification and increase mortality, especially in patients with chronic renal failure. Our previous study revealed kefir peptide could reduce high fat diet (HFD)- induced atherosclerosis by attenuating oxidative stress in *apolipoprotein E* knockout (*ApoE-/-* KO) mice.

OBJECTIVESÂ Â Â Â

The present study aims to investigate the effects of Kefir peptide on bone mass and vascular calcification simultaneously.

METHODSÂ Â Â Â

7-week old male *ApoE-/-* KO and normal C57BL/6 mice were randomly divided into the following 6 groups (n = 6): (1) B6 normal control: C57BL/6 mice on a normal chow diet; (2) ApoE control: *ApoE-/-* KO mice on a normal chow diet; (3) mock: *ApoE-/-* KO mice on an HFD + PBS treatment; (4) KL: *ApoE-/-* KO mice on an HFD + low-dose kefir peptides (100 mg/kg, daily gavage); (5) KH: *ApoE-/-* KO mice on an HFD + high-dose kefir peptides (400 mg/kg, daily gavage); and (6) Atorvastatin: *ApoE-/-* KO mice on an HFD + Atorvastatin (10 mg/kg/day) treatment. After 13-week treatment, the mice were sacrificed for the evaluation of bone and vascular changes.

RESULTSÂ Â Â Â

The atherosclerotic lesion development in *ApoE-/-* KO mice was established after fed the high-fat diet for 13 weeks compared to the normal chow diet-fed B6 and ApoE control groups. Comparing with HFD-fed ApoE mock group, the administration of kefir peptides significantly decrease the levels of ox-LDL, TNF-α in the blood, as well as the inflammation in aorta with lower expression of TNF-α and IL-1β. Aortic sinus section revealed that kefir peptides treatment groups had less atherosclerosis plague, fibrosis and deposition of calcium. The micro-CT analysis of the bone

indicated that kefir peptides treatment groups had lower trabecular separation, higher trabecular thickness, higher cortical bone mass, strength and cortical bone mineral density.

CONCLUSIONÂ Â Â Â

Our finding revealed the anti-atherosclerosis and anti-osteoporosis effects of Kefir peptides by reducing the oxidized lipids in[u1] HFD-fed *ApoE-/-* KO mice. The beneficial effects kefir peptides provide its potential in the preventive medicine for aging.

HYPERMETABOLISM: DOES IT AFFECTS PROGNOSIS IN CRITICAL PATIENTS? INDIRECT CALORIMETRY AS AN INSTRUMENT OF RESEARCH

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INTRODUCTIONÂ Â Â Â

Energy expenditure (EE) evaluation in Intensive Care Unit (ICU) patients is very challenging. Critical illness is characterized by great variability in the EE, which is influenced by the disease itself and the effects of treatment. Indirect calorimetry (IC) is currently the gold standard to measure EE in ICU patients. However, calorimeters are not widely available and predictive formulas (PF) are still commonly used, which may lead to under or overfeeding and its deleterious consequences.1,2 Important metabolic changes occur and catabolism becomes prominent in critically ill patients.3,4 However, both hyper and hypometabolism are observed.5 Hypermetabolism is a condition mediated by the immune system, which can be affected by damaged tissue, pathogenic microorganisms, and the entry of their toxins into the bloodstream, as well as the body's response, with hormones and cytokines release. Due to this situation, hypermetabolic patients often have higher mortality rates compared to metabolically normal patients.6,7

OBJECTIVESÂ Â Â Â

To assess the incidence of hypermetabolism and to compare clinical outcomes between hypermetabolic and normometabolic patients in ICU with EE measured by IC.

METHODSÂ Â Â Â

Single-centre, retrospective, observational study including mechanically ventilated patients admitted in ICU between August 2018 and February 2020. EE was measured by IC. Basal Energy Expenditure (BEE) was estimated by the Harris-Benedict equation (HB). According to their metabolic state (EE/BEE × 100), patients were divided in hypermetabolic (≥130%) and normometabolic (<130%). To determine the limits of agreement between EE and BEE, we performed a Bland-Altman (BA) analysis. Baseline characteristics, severity criteria, and main diagnosis were compared. The primary outcome considered was 30-day mortality. Other outcomes were evaluated, such as the length of stay (LOS) in ICU, LOS in hospital, and length of invasive ventilation.

RESULTSÂ Â Â Â

Of the 55 ICU patients included, median age was 62,0 [52,0-72,0] years. BA showed a mean -411 ± 554 Kcal/d for EE and BEE. Seventeen patients (30,9%) were in hypermetabolic group with a significantly higher proportion of male patients (88,2 vs 11,8%; p=0,04), a lower BMI (26,1 [23,0-27,7] vs 27,7 [24,7-33,8] Kg/m2; p=0,04), an higher proportion of patients admitted due to

medical conditions (76,5 vs 47,4%, p = 0,04), and due pneumonia (41,2 vs 15,8%; p = 0,04). We did not find any statistically significant difference between the two groups, neither in 30-day mortality nor in the other outcomes compared.

CONCLUSIONÂ Â Â Â

There was no statistically significant difference between the two groups, all the clinical outcomes considered. However, we concluded that hypermetabolic patients were predominantly males, had a lower BMI, and had a higher proportion of admissions due to medical conditions and pneumonia.

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SAFETY OF REHABILITATION FOR PATIENTS RECEIVING CATECHOLAMINE THERAPY IN THE INTENSIVE CARE UNIT

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INTRODUCTIONÂ Â Â Â

Although early initiation of rehabilitation among patients in the intensive care unit (ICU) is essential, rehabilitation for patients receiving catecholamine therapy is restricted because of associated complications.

OBJECTIVESÂ Â Â Â

This study examined the safety of early initiation of rehabilitation among patients with catecholamine therapy.

METHODSÂ Â Â Â

This Japanese single-center, retrospective cohort study was performed in October 2017-July 2019. The participants were aged ≥18 and undergoing rehabilitation in the ICU. We measured the time from ICU admission to initiation of rehabilitation, changes in mean blood pressure (MBP) and heart rate (HR) before and after rehabilitation, and the number of cessation due to complications between “catecholamine administered” (CA) and “non-catecholamine administered” (NCA) patients.

RESULTSÂ Â Â Â

475 patients were included; 32% received continuous catecholamine infusion at first rehabilitation. The CA and NCA groups showed the following characteristics: male, 58% and 61% ($p = 0.61$); median age in years (Interquartile range), 73 (65, 81) and 67 (48, 78) ($p < 0.01$); median Acute Physiology and Chronic Health Evaluation II score, 20 (16, 25) and 17 (12, 23) ($p < 0.01$); and median time from ICU admission to initiation of rehabilitation, 0.8 (0.6, 1.0) and 0.9 (0.6, 1.3) days ($p = 0.30$), respectivelyï¼ŽThe changes in MBP were slight but significantly different between both groups (from 85 to 84 mmHg in the CA and from 87 to 89 mmHg in the NCA group; $p < 0.01$); however, the changes in HR were insignificant between both groups (from 89 to 96 bpm in the CA and from 85 to 91 bpm in the NCA group; $p = 0.21$). The number of cessation due to complications was not statistically different between both groups (11% in the CA and 7% in the NCA group; $p = 0.06$). The 2 major causes for cessation in CA patients were decreasing in blood pressure (3.3%) and increasing in heart rate (2.3%).

CONCLUSIONÂ Â Â Â

We concluded that rehabilitation can be safely initiated early for CA patients in the ICU. However, we should pay attention to the changes in blood pressure and heart rate.

INTRODUCING A NEW ANTICOAGULATION GUIDELINE IN A PAEDIATRIC INTENSIVE CARE UNIT FOR POST-OPERATIVE CARDIAC PATIENTS

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INTRODUCTIONÂ Â Â Â

Peri-operative paediatric cardiac patients frequently require anticoagulation therapy (1). Cardiac surgery is associated with abnormal post-operative bleeding and thrombosis events relating to surgically created vascular shunts and indwelling vascular access (2). Additionally, developing neonatal coagulation systems have varying levels of anticoagulant and procoagulant proteins and a less active fibrinolytic system. This can have implications for efficacy of therapies such as heparin as well as laboratory monitoring.

Standardisation of anticoagulation practice can minimise variability and errors and improve patient safety (1). Previous audits on our PICU identified inconsistent, and poor documentation of anticoagulation plans. Subsequently a new guideline was developed by a steering group comprising cardiac surgeons, cardiologists, intensivists, haematologists and pharmacists, and introduced in January 2020 to guide management of anticoagulation in post-operative patients.

OBJECTIVESÂ Â Â Â

To review compliance with and documentation of new anticoagulation guideline for post-operative cardiac patients admitted to PICU and to identify clinical reasons for deviation from protocol.

METHODSÂ Â Â Â

All patients undergoing cardiac procedures admitted to PICU between January and May 2020 were identified. Those that had procedures not included in the guideline were excluded. Patient notes were analysed for demographics, as well as information on surgical procedure and any additional returns to theatre. Documentation of anticoagulation plan on handover from surgical team to intensivists was recorded, along with any changes to anticoagulation as a result of subsequent procedures or complications (bleeding or thrombosis). Documentation of a long-term anticoagulation plan in PICU discharge summary was recorded. The anticoagulation was checked against the guideline recommendations to determine compliance and where there was deviation, medical entries were reviewed to determine whether there was documented clinical reasoning.

RESULTSÂ Â Â Â

A total of 95 patients were identified, following above exclusion criteria from initial cohort of 116 patients. The average age was 2 years and 3 months (range: day 1 of life to 16 years). The initial and long-term anticoagulation plan was in accordance to the guideline in 63% and 52% of patients, respectively. Reasons to deviate from the guideline were documented in 20% and 11%

cases, respectfully. The reason for change to anticoagulation was thrombosis in 19 patients and bleeding in 3 patients. On admission to PICU, 85% had documentation of an anticoagulation plan compared with 63% in previous audit in 2018. Those requiring long-term anticoagulation, 5% patients had no documentation on PICU discharge summary.

CONCLUSIONÂ Â Â Â

The documentation of anticoagulation has improved since last audit. The overall compliance with the new guideline is good however documentation of decisions to deviate from the guideline and on discharge from PICU could be improved.

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e-Posters

PROPORTIONAL ASSIST VENTILATION VERSUS PRESSURE SUPPORT VENTILATION FOR WEANING FROM MECHANICAL VENTILATION IN ADULTS: A SYSTEMIC REVIEW AND META-ANALYSIS

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INTRODUCTIONÂ Â Â Â

Although spontaneous breathing trial (SBT) was recommended for weaning, up to one third of patient had an experience of difficult or prolonged weaning from mechanical ventilation.[1,2] Proportional-assist ventilation with load-adjustable gain factors (PAV), a novel ventilator mode, might assist the respiratory muscles and improve patient–ventilator synchrony.[2-4] However, the effectiveness of PAV remained debatable.

OBJECTIVESÂ Â Â Â

To compare the rate of weaning success, the rate of proportion requiring reintubation, and the mortality in patient with mechanical ventilator undergoing SBT plus PAV versus pressure support ventilation (PSV) until ventilator weaning.

METHODSÂ Â Â Â

We searched PubMed, Embase, the Cochrane collaboration database and Web of Science databases for randomized controlled trials until January 01 2020 to identify all relevant trials with screening the titles and reviewing the abstracts. Two reviewers independently carried out data extraction and appraisal of reporting quality based on a predetermined protocol. This review was according to Cochrane standards and GRADE (Grading of Recommendations Assessment, Development, and Evaluation) was conducted to evaluate the quality of the evidence of each outcome.

RESULTSÂ Â Â Â

Of seven randomized controlled trials, a total of 700 patients with mechanical ventilator in the intensive care unit were enrolled. Compared with PSV, PAV increased the rate of weaning success (relative risk 1.15, 95% confidence interval 1.06 to 1.23, I-square =0%) and reduced the rate of proportion requiring reintubation (relative risk 0.36, 95% confidence interval 0.18 to 069,

I-square = 19%); however, there was no difference in mortality (relative risk 0.71, 95% confidence interval 0.44 to 1.14, I-square = 0%).

CONCLUSIONÂ Â Â Â

This study demonstrates meta-analysis evidence that SBT plus PAV might increase the rate of weaning success and reduce the rate of proportion requiring reintubation. However, compared with PSV, PAV cannot reduce the mortality.

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5. None to declare

DIFFERENT SPONTANEOUS BREATHING TRIAL FOR WEANING FROM MECHANICAL VENTILATION IN ADULTS: A SYSTEMIC LITERATURE REVIEW AND NETWORK META-ANALYSIS

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INTRODUCTIONÂ Â Â Â

A spontaneous breathing trial (SBT) plays an important role with regard to weaning in patients with mechanical ventilation.[1-2] There is a wide choice of SBT with ventilator modes involving different mechanisms, whereas a head-to-head comparison of efficacy of ventilator modes remains debatable.

OBJECTIVESÂ Â Â Â

To assess the relative efficacy of different ventilator modes in SBT for patients with mechanical ventilator in the intensive care unit.

METHODSÂ Â Â Â

A systematic literature search was conducted on August 01 2019 to identify all relevant trials with screening the titles and reviewing the abstracts. The randomized controlled trials were identified and extracted by two reviewers independently. Commonly used ventilator modes such as T-piece, pressure support ventilation, synchronized intermitted mandatory ventilation, automatic tube compensation, continuous positive airway pressure, adaptive support ventilation and proportional assist ventilation were assessed in the network meta-analyses regarding the rate of weaning success, the rate of proportion requiring reintubation, and mortality. We calculated the odd ratio (OR) with 95% confidence intervals (95% CI), and ranked the effects of different ventilator modes using the surface under the cumulative ranking area (SCURA) technique.

RESULTSÂ Â Â Â

Thirty-one randomized controlled trials met the inclusion criteria and included a total of 5,217 patients with mechanical ventilator in the intensive care unit. Proportional assist ventilation was found to be the most effective ventilator mode in increasing the rate of weaning success (OR, 3.15; 95% CI, 1.91-5.18; SCURA 0.96) and reducing the rate of proportion requiring reintubation (OR, 0.48; 95% CI, 0.25-0.92; SCURA 0.89) and mortality (OR, 0.48; 95% CI, 0.26-0.92; SCURA 0.90).

CONCLUSIONÂ Â Â Â

Our study provided network meta-analytic evidence that SBT with proportional assist ventilation have a high probability of being the most effective ventilator mode for patients with mechanical ventilation in increasing rate of weaning success and reducing proportion requiring reintubation and mortality.

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THE THICKNESS OF PREEPIGLOTTIC SPACE, EPIGLOTTIC AND SUBGLOTTIC IN ASIAN ADULTS

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INTRODUCTIONÂ Â Â Â

As estimated, 10%–19% of intubations are difficult. An unexpected failure of intubation would lead to repeated attempts and possibly result in serious laryngeal injury. Proper endotracheal tube (ETT) size selection and potential difficult airway identification are important in order to lessen laryngeal injury. Ultrasonography (US) is a real-time, noninvasive tool to evaluate airway dimension. However, controversies exist in transverse subglottic diameter—the narrowest part of the airway, epiglottic dimension and/or preepiglottic space (PES) thickness. Few study in Asian population is reported.

OBJECTIVESÂ Â Â Â

To quantity the dimensions of subglottic diameter, epiglottic diameter, and PES thickness in normal Chinese adults by ultrasonography

METHODSÂ Â Â Â

This is a prospective cohort analysis. Adult healthy volunteers were recruited at the National Taiwan University Hospital between October and November 2019. Exclusion criteria included pre-existing airway or respiratory diseases, neck tumors and a history of neck operation. Age, sex, height, weight, body mass index (BMI) were recorded. Two independent physicians measured preepiglottic space thickness, epiglottic and subglottic diameter.

RESULTSÂ Â Â Â

A total of 124 subjects were enrolled. The average ages were 32.5±10.4 years and 63 (51%) subjects were males. The thickness of the right edge, median, and left edge of the epiglottis was 2.1 ± 0.4, 2.0 ± 0.4, and 2.2 ± 0.4 mm, respectively. The PES thickness was thicker in males (male: female = 16.18 mm: 14.54 mm, $p<0.001$) and increased BMI (underweight: 13.70 mm, normal-weight: 15.06 mm, overweight: 16.58 mm, and obesity: 18.18 mm, $p<0.001$), respectively. Also, the subglottic dimension was significantly associated with sex [higher in males (14.4 mm vs. 11.1 mm, $p<0.001$)] and increased BMI (underweight: 12.1 mm, normal-weight: 12,5 mm, overweight: 13.8 mm and obesity: 13.7 mm, $p=0.007$).

CONCLUSIONÂ Â Â Â

Healthy Chinese adults exhibit smaller size of subglottic diameter and PES thickness and the size are associated with sex and BMI. A smaller size of subglottic diameter, epiglottic diameter and PES thickness were noted in Taiwanese population. A relatively smaller size of ETT selection should be considered in tracheal intubation and different risk of difficult intubation may exist between ethnicities.

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DRIVING PRESSURE IMPACT ICU SURVIVAL FOR PATIENTS WITH SEVERE ARDS

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INTRODUCTIONÂ Â Â Â

Acute respiratory distress syndrome (ARDS) is common in ICU patients but often unrecognized and under treated [1, 2].

OBJECTIVESÂ Â Â Â

We conducted a case-finding surveillance system for quality improvement and investigate risk factor of mortality among these patients.

METHODSÂ Â Â Â

We prospectively screened patients admitted to adults' ICUs in a tertiary referral medical center in central Taiwan from January to December in 2019. Patients needing mechanical ventilation met criteria of Berlin Definition of ARDS within 24 hours of ICU admission were included for analysis [3]. Demographic, laboratory data, mechanical ventilation setting and clinical outcome of these patients were recorded for analysis.

RESULTSÂ Â Â Â

Totally 1827 patients needing mechanical ventilation admitted ICU were screened. Among these patients, 277 patients met the criteria of ARDS and are eligible for the analysis. The prevalence rate of ARDS was 15.2%, (mild 24.2%, moderate 53.2%, and severe 21.6%% respectively). The overall mortality rate among these patients was 44.8% (mild 31.9%, moderate 47.3%, and severe 53.3%). For mechanical ventiltation setting, the mean tidal volume was 7.4 ml/kg (7.9 in mild, 7.4 in moderate, and 6.9 in severe, $p<0.001$). The mean plateau pressure was 20.9 cmH2O with differences among severity (mild 18.7, moderate 21.0, and severe 23.3, $p<0.001$). Howevere, the driving pressure was not different among different severity groups (mean 12.0 for all, mild 11.5, moderate 12.1 and severe 12.2). However, by multiple variate analysis with logistic regression model, for patients with severe ARDS, driving pressure (OR 1.21, $p=0.016$) was an independent risk factors for ICU mortality. (OR 1.22, $p=0.024$).

CONCLUSIONÂ Â Â Â

In this single center study, ARDS is common among adult ICU patients needing mechanical ventilation. Lung protect strategy with tidal volume less than 8ml/kg was generally applied to these patients. However, the mortality remains high. We also found driving pressure were an independent risk factor for ICU mortality in severe ARDS patients.

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OUTCOME OF CONNECTIVE TISSUE DISEASE RELATED INTERSTITIAL LUNG DISEASE PATIENTS WITH ACUTE RESPIRATORY FAILURE IN THE INTENSIVE CARE UNIT

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INTRODUCTIONÂ Â Â Â

Acute respiratory failure (ARF) in patients with connective tissue disease (CTD)–related interstitial lung disease (ILD) is challenging to intensivists. However, there are few studies regarding clinical characteristics and outcomes of these patients.

OBJECTIVESÂ Â Â Â

The goal of this study is to investigate the clinical features, management, mortality and associated factors in CTD-ILD patients with ARF requiring mechanical ventilation (MV).

METHODSÂ Â Â Â

This was a retrospective, observational study conducted in a 24-bed intensive care unit (ICU) of a medical center in northern Taiwan during a 3-year period. Patients admitted to the ICU with a diagnosis of CTD-ILD with ARF needing MV were included for analysis. Patient characteristics, including demographics, critical-illness factors and outcome data, were collected and analyzed.

RESULTSÂ Â Â Â

A total of 30 patients with ILD who developed ARF were admitted to the ICU during the study period. At the onset of ARF, 13 patients received invasive MV, while 17 patients were treated with noninvasive MV. Overall in-hospital mortality was 66.7%. Mean stay in ICU and hospital was 11.9 and 25.3 days, respectively. The independent risk factor for in-hospital mortality was positive fluid balance during hospitalization (OR 21.543, 95% CI 1.271-365.228).

CONCLUSIONÂ Â Â Â

High in-hospital mortality rate were observed in CTD-ILD patients with ARF requiring MV. Positive fluid balance during hospitalization could serve as a predictive factor of poor prognosis.

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PRONE POSITION, TOCILIZUMAB AND IVERMECTIN FOR TREATMENT OF COVID-19 RELATED ARDS: A CASE REPORT

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INTRODUCTIONÂ Â Â Â

The emergent outbreak of coronavirus disease 2019 (COVID-19) has became a highly contagious infectious disease with a global mortality of 7%. The risk factors of severe presentation include chronic disease such as cardiovascular disease and chronic kidney disease etc. Acute respiratory distress syndrome (ARDS) and multiorgan dysfunction are among the leading cause of death in high risk patients with COVID-19. We report a case of COVID-19 related ARDS with successful treatment of prone position, tocilizumab and ivermectin.

METHODSÂ Â Â Â

A 68-y/o female visited our ED for fever and short of breath for 4 days after she returned from Indonesia. She complained cough with whitish sputum, poor oral intake and general weakness. She denied running nose, chest pain, and diarrhea. Chest X-ray revealed bilateral subpleural infiltration. She was admitted to negative pressure isolated room after throat swab examination for COVID-19 and was treated with levofloxacin and peramivir. Her condition deteriorated rapidly after diagnosis of COVID-19 and ARDS occurred even under hydroxychloroquine treatment on hospital day 4. She was transferred to negative pressure isolated room at ICU and was intubed with protective ventilator support. Her oxygenation improved after prone position but PF ratio still remained under 200. After she received single dose of 240mg tocilizumab for ARDS and high inflammatory parameters (CRP, LDH and ferritin) on hospital day 11 the PF ratio improved above 200. She also received single dose of 12mg ivermectin on hospital day 12 for positive sputum examination of COVID-19. The off label use of hydroxychloroquine, tocilizumab and ivermectin were well discussed with her family for risk and benefinit consideration. Her condition improved and three examinations for COVID-19 were all negative after these treatment. The follow up chest X-ray reveals disappearance of left side subpleural infiltration after low dose prednisolone and she has successfully weaned off ventilator.

RESULTSÂ Â Â Â

The elevated inflammatory parameters (CRP, LDH and ferritin) suggest that a cytokine storm may play a major role after patient was infected by COVID-19. The rational of anti-IL6 antibody such as tocilizumab is to counter the COVID-19 induced early stage cytokine storm and ARDS. However, tocilizumab can not treat the corona virus and the rationale of combination with ivermectin is to inhibit the replication of corona virus. The efficacy of corticosteroids, commonly used anti-inflammatory agents, to treat COVID-19-induced early stage cytokine storm, ARDS and late stage pulmonary fibrosis remain controversial.

CONCLUSIONÂ Â Â Â

Our case is unique and successful in the combination treatment of prone position, tocilizumab and ivermectin for COVID-19 related ARDS.

SUCCESSFUL TREATMENT OF COVID-19 PATIENT RESCUE THERAPY BY EXTRA-CORPOREAL MEMBRANE OXYGENATION: A CASE REPORT

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INTRODUCTIONÂ Â Â Â

The novel coronavirus disease 2019 (COVID-19) became a global pandemic with a mortality rate around 6.22% [1-5]. One third of patients required intensive care unit (ICU) admission and around 30% patients developed to acute respiratory distress syndrome (ARDS) [6]. The intractable respiratory failure in up to 98% of all non-survivors [7,8]. The treatment with severe COVID -19 still uncertainties. In severe cases, extracorporeal membrane oxygenation (ECMO) may be an option. In Taiwan, there was more than 440 confirmed cases in which 24 were ventilator-needed and 7 ever received ECMO. Herein, we want to share our successful experience about the treatment of severe COVID-19 patient with ECMO support.

OBJECTIVESÂ Â Â Â

We reported a severe COVID-19 patient who was discharged from the hospital after being successfully weaned from ECMO and receiving pulmonary rehabilitation.

METHODSÂ Â Â Â

A 67-year-old woman with medical history of hypertension, she was sent to emergency room due to fever and chest tightness. The chest X-ray showed bilateral lung infiltration (figure 1). After admission, the clinical situation got worse and oxygen saturation (SpO2) less than 92%. She was then intubation with mechanical ventilator support. Nasopharyngeal specimen and the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) test was positive, the diagnosis of COVID-19 was confirmed. Under the impression of ARDS, protective strategy was applied including low tidal volume and higher PEEP. Despite intensive care, the patient's lung compliance and hypoxemia worsened with PaO 2 / FiO 2 ratio of 61. She received prone ventilation of 16hrs/day(figure 1B) but she condition no improvement. On the 20th day, the veno-venous ECMO rescue treatment (figure 1C) were initiated.

RESULTSÂ Â Â Â

The general condition improved and ECMO was weaned 8 days later. When PC: 32 cm H2O, PEEP: 12 cm H2O and FIO250% under PCV mode, the SpO2at 96%, the ECMO was removed(Figure 2 the trend of PaCO2 and P/F ratio). Extubation was successfully on 18th days then shift to high-flow nasal cannula. She was weak but able to stand and normal neurologic

examination. Active/passive motor training is performed. Weakness of the muscles due to prolong intubation and muscle relaxants, we performed a bedside breath recovery therapy using oscillatory positive expiratory pressure (OPEP), a variant of PEP that combines PEP with high-frequency vibration or oscillation, which helps to cough out the mucus and prevent hospital-acquired pneumonia. Fortunately, she was discharged with well recovery without oxygen needed.

CONCLUSIONÂ Â Â Â

This is the first successful case of severe COVID-19 patient treated with ECMO in Taiwan. As guideline point out, early intubation and early consider the indication of ECMO is important for these patients. We also apply pulmonary rehabilitation program for this patient with a good benefit.

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9. NO

ACUTE EXACERBATION OF IDIOPATHIC PULMONARY FIBROSIS WITH RESPIRATORY FAILURE

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INTRODUCTIONÂ Â Â Â

Idiopathic pulmonary fibrosis was a critical and progressive disease with poor prognosis. Every acute exacerbation of idiopathic pulmonary fibrosis (AE-IPF) was an inflection point during the IPF course and may lead to the poor outcome of IPF. Respiratory failure was the most common comorbidity with AE-IPF, and the most common (40%) cause of IPF death was acute exacerbation. No clear nor precise IPF guideline disclose better outcome with invasive or non-invasive ventilation support when AE-IPF. Now, we tried to figure out the clinical course of AE-IPF with respiratory failure.

METHODSÂ Â Â Â

We retrospectively enrolled 7 patients with AE-IPF combined with respiratory failure from June 2017 to December 2019. The demographic data of IPF patients were collected, and we also recorded their different oxygen support during the AE-IPF course. The statistic analysis methods included chi-squared test and Student's *t*-test.

RESULTSÂ Â Â Â

Total 7 AE-IPF patients with respiratory failure were collected, and 5 patients (71.4%) were male. The mean DLCO predict percentage was 29% (27-46%) among 7 patients. The median time from diagnosis to AE-IPF was 0.7 year (0.0-1.5 years). The median arterial oxygen tension was 90.5 mmHg (62.6-363.7) when respiratory failure. Five out of 7 patients received mechanical ventilator use, and the other two received high-flow nasal O2 cannula. The median peak airway pressure was 34 cm-H2O among AE-IPF patients with mechanical ventilator use. All AE-IPF patients died in 90 days after admitting to ICU.

CONCLUSIONÂ Â Â Â

When AE-IPF with ICU admission, it was a warning signal of IPF patient with death. We still have no practical outcome for invasive or non-invasive ventilation support for AE-IPF with respiratory failure. More studies were needed to demonstrate the clinical practice with better AE-IPF outcome.

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SEQUENTIAL RAPID SHALLOW BREATHING INDEX UNDER PRESSURE SUPPORT MODE VENTILATION TO PREDICT THE LIBERATION OF VENTILATOR

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INTRODUCTIONÂ Â Â Â

Yang and Tobin proposed rapid shallow breathing index (RSBI) concept in 1991, which was defined as the ratio of respiratory frequency to tidal volume (f/VT) in the intubated patients with spontaneous breathing trial1. Although this index is most common use to decide whether patient was suitable for liberation of ventilator, its accuracy still controversy. Since then many studies have followed up the measurement time point and cut-off value (105 breaths/ min/L) to survey the success rate in the critically ill patients2. In the past studies, only a few papers ever mentioned the role of continuing RSBI in the spontaneous trial. With the new machine developing, we can get the RSBI more easily and timely even under low pressure support (PS) mode3-6. Whether the continuing index at different level of PS can help clinicians to initiate the weaning process earlier is unknown.

OBJECTIVESÂ Â Â Â

The aim of this study is to measure the RSBI during gradually lower the pressure support level of the ventilator in the weaning process. We will also observe the RSBI trend at different PS level and compare the prediction rate of liberation ventilator to conventional method.

METHODSÂ Â Â Â

Patients in internal medical intensive unit (MICU) who use ventilator more than 48 hours and ventilator mode shift to PS with support level at 12 cmH2O were enrolled. When lowering the support level 15 minutes later, we will record the RSBI data of ventilator (Hamilton Galileo,Hamilton Mediacal, AG, Rhazuns, Switzerland). The adjusts of PS level no more than twice per day and needs at least 4 hours separate interval. The data at pressure level of 12 cmH2O, 10 cmH2O, 8 cmH2O will be recorded as RSBI-1, RSBI-2, and RSBI-3. The conventional measurement of RSBI at T-piece trial is recorded as RSBI-4. The primary end point is the relationship between the trend of RSBI and successful rate of liberation ventilator.

RESULTSÂ Â Â Â

Total sixty patients were enrolled. In these patients, 40 were male, mean age was 69.2 year-old. The most common causes of intubation including pneumonia in forty patients, renal impairment in 8 patients, airway disease in 3 patients and heart disease in 4 patients. Forty-nine patients was weaned the ventilator successfully. There was no significant difference in the age, gender or co-morbidity between the successful and failure weaning group. The RSBI at each level of pressure support were RSBI: 43.6 ± 19.7 (PS 12), 46.8 ± 20.5 (PS 10), RSBI: 491 ± 22.5 (PS 8) and RSBI:

78.6 ± 41.9 (TP). It’s interesting that in the failure group, the RSBI was lower than successful group in the each level of PS mode, but the RSBI raised more obviously at T-piece trial although it was less than 105. That implicates the trend of RSBI between PS 8 cmH2O and T-piece trial may be reflect a possibility of weaning failure.

CONCLUSIONÂ Â Â Â

The RSBI data was similar at different support level under the pressure support mode. According to the result, only RSBI of PS mode cannot predict the result of extubation. However, if the RSBI at T-piece trial raising obviously compare to the data of PS 8 cmH2O, physicians still need to pay more attention about the possibility of weaning failure even the RSBI is less than 105.

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WEANING CRITERIA FROM MECHANICAL VENTILATION FOR COVID-19 PATIENTS

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INTRODUCTIONÂ Â Â Â

Timing of extubation for mechanically ventilated COVID-19 patients is challenging. Any guideline about COVID-19 dose not definite the weaning criteria. It is important to make it for COVID-19 patients because premature extubation is harmful. At first, it causes an increase of reintubation, and it is one of the highest risk factor for generating aerosol. Second, high-flow nasal oxygen (HFNO) or non invasive ventilation (NIV) is unlikely to be desirable in patients with COVID-19 after extubation. Though there is much discussion about the degree to which it is aerosol-generating and the risk of viral spread, It has not been studied. We prepared the weaning criteria for COVID-19 patient. The purpose of this study is to examine how much it makes extubation succeed.

METHODSÂ Â Â Â

This retrospective observational study took place from March 3 to May 31, 2020. COVID-19 patients admitted to the ICU and received mechanical ventilation for at least 24 hours who fulfilled the weaning criteria were eligible. The weaning criteria in the setting of spontaneous breathing trial (SBT) with 5cm-H2O PSV and PEEP of 5cm-H2O were (1) respiratory stability(PaO2/FIO2 ratio >200, respiratory rate <30/min, no signs of distress in breathing); (2) adequate mentation(eg, following instructions without continuous sedative infusions); (3) hemodynamic stability, defined as heart rate less than 140/min. Generally, one of the respiratory stability for extubation are defined as PaO2/FiO2 >150 in the guideline1. In this study, it was set to 200 or higher for COVID-19 patients by reference of past study because reintubation caused by premature extubation is associated with aerosol-generating2. We decided not to use HFNO or NIV after extubation. After extubation, ICU physicians assessed the need of reintubation in every round. The primary outcome was successful extubation defined as remaining free of mechanical ventilation 48 hours after extubation. Besides that, we investigated the patient backgrounds, clinical characteristics associated with the risk of reintubation, duration of intubation and reintubation over 48 hour later after extubation.

RESULTSÂ Â Â Â

A total of 14 patients diagnosed with laboratory-confirmed COVID-19 were included in this study. Before extubation, the median PaO2/FiO2 ratio was 256 (242-271), peak inspiratory pressure (PIP) was 11 mmHg (11-14.7), respiratory rate was 21 /min (14-27), tidal volume was 10 ml/kg predicted body weight (8-11.6). The median rapid breathing shallow index was 34 breaths/min/L (25-51). All patients had success of extubation. None of the patient received HFNO or NIV after extubation. The median duration of intubation was 10 days (7-19). Reintubation was received for 2 patients over 48 hour later after extubation. One was due to pneumothorax, the other was disturbance of consciousness.

CONCLUSIONÂ Â Â Â

This is the first study to prepare the weaning criteria for COVID-19 patients. This result suggests that it leads to successful extubation without use of HFNO or NIV. Further research will be necessary to consider the most appropriate weaning criteria.

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ARTIFICIAL INTELLIGENCE SIMULATION FOR WEANING VENTILATOR IN CRITICALLY ILL PATIENTS

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INTRODUCTIONÂ Â Â Â

It is important to consider the timing of weaning ventilator & extubation. The development of powerful data storage, computer computing speed and algorithms, artificial intelligence (AI) has experienced unprecedented development recently.

OBJECTIVESÂ Â Â Â

We are interested that could AI be used to help successfully weaning from ventilator.

METHODSÂ Â Â Â

We collected continuous data of ICU patients using ventilators over one day in a medical center between Sep 2017 & Feb 2018, which including vital signs (HR, BP, SpO2), & ventilator parameters : RR ,Ve, FiO2, PEEP, Ppeak,Cdyn, RSBI. The first stage (initiate to wean ventilator) according to ventilator weaning protocol is defined as: when the ventilator mode is in assist-control mode and RR <30, Ve <12L/min, FiO2â‰¦50%, PEEPâ‰¦8cmH2O, SpO2â‰§92%, HR <120/min, 90 <SBP <180mmHg. Repeated measure ANOVA and generalized linear model statistical analysis are used to find the cut-points for the second and third stages of ventilator weaning. The second stage (reducing PS level) is defined as: when Ve<9, Ppeakâ‰¦24, Cdynâ‰§30, FiO2â‰¦40%, PEEPâ‰¦8, SpO2â‰§92%, HR <120 and 90 <SBP <180. The third stage (consider extubation) is defined as: when PSLâ‰¦10, Veâ‰¦9, Ppeakâ‰¦16, Cdynâ‰§39 ,FiO2â‰¦35%, PEEPâ‰¦8, SpO2â‰§92%, HR <120, and 90 <SBP <180. Anaconda software (python version 3.5.2) and the machine learning random forest algorithm were used to establish a prediction mode.

RESULTSÂ Â Â Â

There were 6204 patients with more than 250,000 records of data in each of the 3 stages of the machine learning model. The AUC scores in three stages were 0.91, 0.91, and 0.94 individually. The results with accuracy: 0.90, sensitivity: 0.95, specificity: 0.85 were found in first stage. With accuracy: 0.90, sensitivity: 0.95, specificity: 0.85 were found in second stage. With accuracy: 0.93, sensitivity: 0.93, specificity: 0.93 were found in third stage.

CONCLUSIONÂ Â Â Â

The effect of simulation to predict the timing of ventilator weaning by AI model is satisfied. Further studies are needed to prove its clinical usefulness.

e-Posters

ASSOCIATION BETWEEN URINARY ANGIOTENSINOGEN AND AKI AMONG STROKE PATIENTS IN THE ICU

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INTRODUCTIONÂ Â Â Â

Chronic kidney disease (CKD) is an independent risk factor for stroke, including both hemorrhagic and ischemic subtypes(1). On the other hand, the incidence of acute kidney injury (AKI) in stroke patients has been reported to be around 10%(2). Although AKI has a significant impact on the prolonged hospital stay and clinical outcomes of stroke patients(2), there is no established mechanism or marker for AKI in stroke patients. Urinary angiotensinogen (uAGT) has been identiï¬ed as an indicator of intrarenal renin-angiotensin system (RAS) activity(3). Although the role of uAGT has been investigated in CKD or hypertension, less data is available in stroke patients.

OBJECTIVESÂ Â Â Â

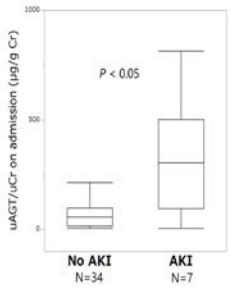
we aimed to examine the association between uAGT and AKI in the patients hospitalized with stroke in the ICU.

METHODSÂ Â Â Â

We measured uAGT by ELISA and corrected for urine creatinine (uCr) at admission in 41 patients admitted to the ICU for stroke from January 2017 to January 2018. We assessed the association between uAGT/uCr at admission and the development of AKI during hospitalization. The ability of uAGT to predict the development of AKI was tested by using the area under the ROC curve (AUC). We also examined the effects of AKI on hospital stay and outcomes.

RESULTSÂ Â Â Â

The clinical status of 41 patients improved, however 7 patients developed AKI during hospitalization. Although there was no significant difference between the two groups as for the use of contrast media, uAGT at admission was significantly elevated in patients who developed AKI during hospitalization compared with those without AKI (305.6 [IQR: 96.2-502.2] μg/g Cr vs 58.5 [IQR: 15.5-99.2] μg/g Cr; Pï¼œ0.05), and which was a stronger predictor of the development of AKI (AUC = 0.78) than serum creatinine at admission (AUC = 0.69) (Pï¼œ0.05). There was no significant difference in hospital stay and outcome between the two groups, however hospital stay tended to be longer in the patients who developed AKI during hospitalization.



CONCLUSIONÂ Â Â Â

Elevated uAGT at admission was associated with the development of AKI during hospitalization in the patients admitted to the ICU for stroke. Further prospective studies are required to validate our findings and explore their clinical implications.

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A SURVEY OF RRT PRACTICES AMONG INTENSIVISTS IN INDIA- WHERE WE ARE?

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INTRODUCTIONÂ Â Â Â

Acute kidney injury (AKI) in intensive care units (ICU) is associated with a high mortality of up to 50 - 60%. 20% of patients admitted in ICUs undergo renal replacement therapy (RRT) for various reasons, sepsis being the most common. The epidemiological data about the use of various modalities of RRT in AKI, from lower middle income and developing countries such as India (where the healthcare services is disproportionately distributed between corporate, private and government setup) is lacking.

OBJECTIVESÂ Â Â Â

(1) To study and assess the current RRT practices and resources available in ICUs of various institutions across India. (2) To study the factors influencing the indication, initial RRT modality preference and difference in RRT practices with respect to the type of setup

METHODSÂ Â Â Â

An online survey was distributed from 11th to 20th October 2019 to members of the Indian Society of Critical Care Medicine (ISCCM) through the ISCCM portal in India. 320 responses were received. The ICUs included were medical surgical ICUs amongst government, private and corporate hospitals.

RESULTSÂ Â Â Â

ICU Settings and RRT facilities - The respondents to the survey were practicing in a corporate (50%), private (41%) and government (9%) setup. The private or corporate hospitals as compared to government hospitals were better equipped in terms of higher bed strength, availability of more resources and manpower. (Figure 1)

RRT Practices - Various indications (Figure 2) to initiate RRT were not different according to KDIGO guidelines. Only 10% respondents in the survey considered fluid accumulation more than 20% as a trigger for initiation of RRT. Femoral venous cannulations (41%) were more common as a site of venous access for dialysis catheter in government setup, internal jugular cannulations were preferred in corporate and private sector (81% and71% respectively)(p=0.00). Regarding initial intermittent haemodialysis (IHD) settings: 35% of the respondents were not aware of the initial settings while the rest 65% used suboptimal blood flow rates(100- 200 ml/min) and dialysis flow rates (100-300 ml/min). For haemodynamically unstable patients, SLED was the RRT of choice as used by 57% intensivists while 38% preferred continuous replacement therapy (CRRT). With regard to CRRT, 54% intensivists considered high cost as sole reason for not using it even though a correct indication was present (p=0.007). Unfractionated heparin (UFH) as

infusion or bolus was more commonly (76%) used anticoagulant for CRRT as compared to regional citrate anticoagulation (11%) across all set- ups. Adequate urine output (more than 500 ml per day) was an important criterion with or without the use diuretics to discontinue the RRT.

CONCLUSIONÂ Â Â Â

(1) In India, the resources and availability of RRT to support critically ill patients is limited, more so in government setups. (2) Significant number of healthcare providers do have knowledge gap when it comes to prescription and practices regarding RRT. This needs to be bridged so as to improve efficacy of RRT and related outcomes. (3) Where available, the use of CRRT is not widespread due to high cost incurred to the patients. (4) Trained personnel and making RRT affordable and accessible is the way forward for better utilisation and benefitting the critically ill patient.

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COMBINED USE OF CURCUMIN CAN REDUCE RENAL TOXICITY CAUSED BY ACETAMINOPHEN (APAP)

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INTRODUCTIONÂ Â Â Â

Acetaminophen (APAP) is a component of various analgesics and antipyretics. High doses of APAP can cause acute liver and kidney toxicity. In this study, curcumin and turmeric powder with health-care efficacy were used as auxiliary formulations for APAP treatment. Curcumin was originally a food flavoring, but many studies have now confirmed its good antioxidant capacity and can be used to inhibit free radical rise and inflammation in the body to protect organs and cardiovascular or liver and kidney damage.

METHODSÂ Â Â Â

In this study, the use of acetaminophen to induce renal cell cytotoxicity, further curcumin or turmeric crude extract, observing the comparison of the toxicity of curcumin against APAP induced renal epithelial cells, renal fibroblasts, and renal cancer cells.

RESULTSÂ Â Â Â

The results showed that in kidney epithelial cells, the crude extract extracted from turmeric powder only had the effect of inhibiting the APAP toxicity, but APAP combined with curcumin needed caution, because curcumin could enhance the APAP toxicity.

On renal fibroblasts, it was shown that low dose curcumin alone had no effect on cytotoxicity, but when combined with APAP, there was a significant increase in renal fibroblast toxicity. Finally, it was found on kidney cancer cells that the use of the second low dose of 20 μM curcumin was toxic, almost the same as the high dose of 80 μM curcumin, although high dose curcumin inhibited the growth of renal cancer cells, but due to the high dose of 80 μM turmeric It may also be toxic to normal renal epithelial cells, so the preferred choice may be low dose APAP with curcumin 8 μM.

CONCLUSIONÂ Â Â Â

The purpose of this experiment is to use this research result, expecting to further clarify the curcumin, turmeric crude extract, such antioxidant nutrients in health care research, and for the protection of drugs caused by cytotoxicity as a reference data.

BASELINE GLUCOSE LEVEL RELATE TO THE THREE YEARS MORTALITY RATE OF CRYPTOCOCCAL MENINGITIS: RETROSPECTIVE ANALYSIS IN SINGLE MEDICAL CENTER

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INTRODUCTIONÂ Â Â Â

Cryptococcal meningitis (CM) is a disease of high mortality rate, both in HIV infected or HIV non-infected patients. Several studies investigated the long-term (mostly one year) mortality. But not many researches did the mortality analysis more than one year. We analyzed on the “long-term (three-year)” mortality, and compared the key factors which related to patients’ death.

METHODSÂ Â Â Â

We did this retrospective cohort study by China Medical University Hospital’s Clinical Research Data Repository (CMUH-CRDR). We identified 181 cultures (from 83 patients) were obtained from cerebrospinal fluid (CSF). We included these 83 patients who had cryptococcal meningitis as our study population.

RESULTSÂ Â Â Â

The three-year survival of cryptococcal meningitis in our hospital is 46%. We separate the patients into two groups: death within three years (45 patients) and alive within three years (38 patients), and found some factors related to three-year mortality: larger age, lower initial GCS, non-HIV, had liver cirrhosis, higher blood CRP, ALT, glucose, lower blood Hb and eGFR. Then we put some factors into multivariable Cox proportional hazard model, and found the “baseline glucose” had great contribution to the three-year mortality.

CONCLUSIONÂ Â Â Â

Several factors contribute to the three-year mortality of cryptococcal meningitis. And the baseline glucose is an important factor, which was not widely reported by previous research. It’s always important to check critical patients’ glucose to speculate the prognosis and guide further treatment.

THE EFFECT OF ADJUVANT RESPIRATORY THERAPY ON SPUTUM EXPECTORATION IN PATIENTS WITH HEAD AND NECK CANCER RECEIVING CONCURRENT CHEMORADIOTHERAPY

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INTRODUCTIONÂ Â Â Â

Head and neck cancer is one of the most common malignancies worldwide. This cancer usually arises within one of these primary sites, including nasal cavity, paranasal sinuses, oral cavity, pharynx, larynx, and salivary glands. The main types of treatment for managing head and neck cancer are surgery, radiation therapy and chemotherapy. Common side effects from concurrent chemoradiotherapy include mucositis, dysphagia, nausea, vomiting, cachexia, and fatigue, and can cause pain, poor nutrition, and decreased quality of life. Sputum expectoration is a major concern during concurrent chemoradiotherapy. Insufficient cough makes the patient’s breath difficult and recurrent lower respiratory tract infection, a serious problem more pronounced in myelosuppression status. The consequences of sputum expectoration mostly delay concurrent chemoradiotherapy and decrease overall efficiency of cancer treatment. Therefore, it is important to improve sputum expectoration in patients with head and neck cancer.

OBJECTIVESÂ Â Â Â

The aim of this study is to improve sputum expectoration through adjuvant respiratory therapy and to minimize the delay to the course of concurrent chemoradiotherapy.

METHODSÂ Â Â Â

This is a prospective randomized trial conducted in head and neck oncology clinic of a medical center. Inclusion criteria were aged between 20- and 70-years old patients diagnosed with a head and neck cancer prepared for concurrent chemoradiotherapy. Subjects enrolled in control group were taught breathing control and sputum expectoration techniques. Patients enrolled in experimental group received inhalation therapy with nebulized bronchodilators, Breath Actuated Nebulizer (Terbutaline 5 mg (2 mL) + Ipratropium 0.5mg (2mL)), and were taught breathing control and sputum expectoration techniques.

RESULTSÂ Â Â Â

A total of eighty consecutive patients had been screened and were randomly assigned to the control group (n=41) and experimental group (n=39). There were 31 subjects exclude based on the exclusion criteria. There were 49 patients completed this trial (control group 20 subjects; experimental group 29 subjects). The demographic characteristics included: 46 males (93.8%) and 3 females (6.2%); average age of control group and experimental group were 54.1 $\pm$ 7.9 yrs vs 52.2 $\pm$ 9.2 yrs, p = 0.23, respectively; average height were 165 $\pm$ 5.3 cm vs 166 $\pm$ 7.8 cm, p =

0.27; average weight were 65.5 ± 8.6kg vs 68.4 ± 12.3kg, p = 0.17; BMI were 24.1 ± 3.3 vs 24.6 ± 3.7, p = 0.49. the completion of the schedule (75.8% vs 75%, p=0.4). Results of a questionnaire survey on the effectiveness of assisted breathing therapy revealed statistically significant improvement of the score in "After inhaling bronchodilators, I felt decrease in viscosity, amount of secretions and frequency of coughing".

CONCLUSIONÂ Â Â Â

The adjuvant respiratory therapy although there is no significant difference between the control group and the experimental group in promote the completion of the schedule of concurrent chemoradiotherapy but also improve the ease of sputum expectoration in patients with head and neck cancer.

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EFFECTS OF PROPHYLACTIC DIALYSIS ON CORONARY BYPASS SURGERY

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INTRODUCTIONÂ Â Â Â

The presence of renal dysfunction results in several physiologic abnormalities that could contribute to adverse outcome and increase the necessity of intensive care especially for postoperative patients. The effect of prophylactic dialysis on postoperative morbidity and mortality rates after cardiac surgery is unknown; we aimed to investigate the effects.

METHODSÂ Â Â Â

Our study was a randomized-controlled clinical trial involving patients with non-dialysis-dependent renal insufficiency, defined as stage-3 or -4 chronic kidney disease and requiring CABG surgery. Patients in the intervention group were treated by dialysis before CABG surgery. CABG surgery was similar in both groups. Postoperative outcomes, including stroke, ventricular arrhythmia, requirement for a second surgery for bleeding or deep infection of the sternum, and duration of ventilation were examined for associations with mortality and morbidity.

RESULTSÂ Â Â Â

Eighty-eight patients were included in this study. Three months after surgery, 37 patients (42%) had at least some form of morbidity, whereas the remaining did not. For 23 patients in the nondialysis group, the average time to morbidity onset was 79.3 ± 3.9 days, whereas the average time to morbidity onset for 14 patients in the dialysis group was 77.7 ± 4.8 days. The difference in the time to morbidity onset between the groups was not statistically significant ($p = 0.413$). Of the 88 patients, 9 (18.9%) died: 8 (89%) from the non-dialysis group and 1 (11%) from the dialysis group. Based on Cox regression analyses, the hazard ratio for death in the non-dialysis group was 10.85 compared to the control group.

CONCLUSIONÂ Â Â Â

Prophylactic dialysis prior to CABG surgery in patients with renal insufficiency may decrease mortality after surgery without affecting morbidity.

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THE ASSOCIATION OF PAIN CONTROL IN THE INTENSIVE CARE UNIT ON THE PAIN, AGITATION, AND DELIRIUM

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INTRODUCTIONÂ Â Â Â

In the intensive care units(ICU), most of the patients suffer from pain and need medical control torelief. Both agitation and delirium are important issues in critical care. However, there were limited studies about the association between thepain, agitation, delirium, and pain control.

METHODSÂ Â Â Â

From Oct 2016 to Nov 2018, all the patients admitted to our ICU were included.In our hospital, the Critical-Care Pain Observation Tool (CPOT) was used to assesspatient pain, while the Richmond Agitation-Sedation Scale (RASS) was used toassess agitation, and delirium was evaluated by the Confusion Assessment Methodfor Intensive Care Units (CAM-ICU) to assess delirium. Patient’s pain wascontrolled according to a regular guideline of pain in our hospital and on-calldoctor’s discretion.

RESULTSÂ Â Â Â

During the study period, the association of pain occurrence and agitation was0.244(Person, P=0.11). There were no significant associations between the painand delirium with delirium (-0.112, P=0.248; -0.022, P=0.818). Delirium wasassociated with medicines for pain(0.365, P<0.001).The pain was found to associate with agitation. There were no statisticalsignificances of the delirium between pain and agitation.

CONCLUSIONÂ Â Â Â

This study demonstrated that pain mayinduce agitation; however, delirium was not associated with pain and agitation.In patients with delirium, medication for pain control should be considered ratherthan pain and agitation.

THERAPEUTIC HYPOTHERMIA FOR THYROID STORM COMPLICATED WITH VENTRICULAR FIBRILLATION AND SUDDEN CARDIAC DEATH

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INTRODUCTIONÂ Â Â Â

Two issues will be discussed in this article, and one case report will be presented. We would like to share our experience about therapeutic hypothermia in a patient with thyroid storm complicated with Vf and SCD, and recovered completely.

Historically, only about 20% of cardiac arrest survivors who remained comatose have awakened with a good neurologic outcome. Therapeutic hypothermia refers to deliberate reduction of the core body temperature, typically to a range of about 32° to 34° C in patients who don’t regain consciousness after return of spontaneous circulation following a cardiac arrest.

OBJECTIVESÂ Â Â Â

This is a 48-year-old lady who visited the emergent department due to spiking fever and sweating. Initial heart rhythm was Af with rapid ventricular rate, the heart rate was around 150/minute. Fever 39.5 degree C and sudden collapse and pulseless was noted. The rhythm became Vf and defibrillation 200J was performed. Pulseless electric activity was noted and we started CPR. Recovery of spontaneous circulation was found and therapeutic hypothermia was arranged and the patient was admitted to the intensive care unit. The serum free T4 level showed more than 7.7 ng/dl and the TSH was lower than 0.001 mU/L. After ventilator support and antithyroid medical therapy, the therapeutic hypothermia and mechanical ventilator were weaned gradually in 2 months. Heart failure was noted with frequent ventricular premature beats and some episodes of non-sustained ventricular tachycardia. The patient was discharged by foot after ICD implantation. Complete recovery was noted.

METHODSÂ Â Â Â

Hypothermia counteracts many of the destructive mechanisms of cardiac arrest. Its effects resemble those of cardiac defibrillation, which makes the heart stop and then reset itself to a normal rhythm. Similarly, hypothermia halts destructive brain mechanisms and lets the brain reset itself to normal functioning.

The condition of thyroid storm may cause numerous hemodynamic derangements such as hypovolemia and heart failure. Shock status may be found, either cardiogenic shock or distributive shock due to increased tissue oxygenation causes systemic vasodilation. Spiking fever usually occurred and may worsen tachycardia and reduce ventricular filling and thereby exacerbating cardiovascular dysfunction.

RESULTSÂ Â Â Â

In presented case, therapeutic hypothermia provide an adequate condition to slower the rate of metabolism due to thyroid storm. In our opinion, therapeutic hypothermia may be helpful in thyroid storm induced sudden cardiac death, by lower the body temperature and decrease the severity of cell death, suppresses the inflammatory process, and reducing cerebral edema very well.

CONCLUSIONÂ Â Â Â

The condition of hyperthermia is harmful because it increases cardiac workload and can also cause organ damage (e.g. rhabdomyolysis, delirium), so therapeutic hypothermia was indicated. Thyroid storm can occur in any person with untreated hyperthyroidism. In our opinion, therapeutic hypothermia may be helpful in thyroid storm induced sudden cardiac death, by lower the body temperature and decrease the severity of cell death, and lead to complete recovery very well.

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4. We are thankful to our colleagues who provided expertise that greatly assisted the research, although they may not agree with all of the interpretations provided in this paper.

EA Oral presentation 3

MULTIDRUG-RESISTANT BACTERIAL INFECTION CHARACTERISTICS IN CRITICALLY ILL BURN PATIENTS. 10 YEARS OF EXPERIENCE

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INTRODUCTIONÂ Â Â Â

Critically ill burn patients are at high risk for developing infections, and multidrug-resistant (MDR) bacteria related ones' associates with up to 80% mortality. 1 The importance of adequate treatment and prompt identification of these pathogens is crucial to reduce these rates. 2 Local clinical data help staff to use the most convenient strategy against MDR native pathogens.3

OBJECTIVESÂ Â Â Â

To identify critical burn patients with multidrug-resistant (MDR) infection and the correlation with the mortality

METHODSÂ Â Â Â

Critically ill burn patients admitted to Vall d´Hebron University Hospital in Barcelona between 2010 through 2019 with an MDR infection deploy this cohort. Demographical and clinical data recollected from an electronic database were analyzed. This report aims to describe MDR bacteria infection rate, microbiological and clinical associations with outcome.

RESULTSÂ Â Â Â

345 patients were admitted during the study period. ABSI median score 7 (IQR 25%-75%: 6-9). 68 deaths corresponding to 19,7% of the global population. Nosocomial pneumonia was the most prevalent infection with 75 patients (21,7%) followed by bacteremia in 68 patients (19,7%). 59 patients (17%) presented one or two isolations of an MDR bacteria, *Pseudomonas aeruginosa* accounted as the first MDR pathogen in 36 patients (61%) followed by Extended-Spectrum Beta Lactamases *Enterobacteriacea*e in 11 patients (19%) and Methicillin-resistant *Staphylococcus aureus* in 5 patients (8,5%).

When comparing groups; MDR infected group has an ICU LOS mean 38 days (IQR 25%-75%:19-49) versus non-MDR infected patients mean 10 days (IQR25%-75%:1-14, p= <0,001), Mechanical ventilation duration in pneumonia patients was mean 44 days (IQR 25%-75%:25-51)

versus 38 days (IQR 25%-75%:19-47, p=0,121) respectively. Hospital LOS in first group was 59 days (IQR 25%-75%:36-72) versus 29 days (IQR 25%-75%: 13-38, p<0,001). Mortality was higher in MDR Infected group 15 patients (25,4%) versus 54 (18,5%) in non-MDR infected ones, however non-statistical significance was observed (p=0,227).

CONCLUSIONÂ Â Â Â

Burn critically ill patients with a MDR infection accounts for an important group of this cohort, with a higher length of stay both in hospital and Intensive Care Unit, with higher mortality than those that do not present and MDR infection. Efforts should be made to prompt identification and treatment to reduce this rate.

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EPIDEMIOLOGICAL CORRELATION OF INVASIVE PULMONARY ASPERGILLOSIS WITH AIR POLLUTION AND INFLUENZA IN SOUTHERN TAIWAN

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INTRODUCTIONÂ Â Â Â

Invasive pulmonary aspergillosis (IPA) might comprise up to 23%-29% of severe influenza patients. Epidemiological association of IPA with severe influenza (2015-2016) has been postulated in southern Taiwan. Prior high-level ambient fine particulate matter (PM) with a diameter of 2.5 micrometers (designed PM2.5) before a large influenza epidemic was noticed in Tainan city. Association of PM10 with air concentration of *Aspergillus* spore was previously documented in the same city. However, detailed evidence of epidemiological linkage between PM (PM2.5 or PM10) and IPA has been limited.

OBJECTIVESÂ Â Â Â

We conduct the study to correlate the incidence of IPA with air pollution and influenza.

METHODSÂ Â Â Â

We conducted two stages for the study. Firstly, we retrospectively reviewed testing data of influenza and IPA for patients from 3 Chi Mei medical systems (1 medical center, 1 regional hospital, and 1 local hospital) in Tainan City from January 2015 through December 2018. Secondly, we prospectively observe data of influenza and IPA for patients in the same systems from January 2019 through December 2019. Influenza was defined as those who were confirmed by PCR methods for Flu A, Flu A(H1N1), Flu A(H3N2), and Flu B. IPA was defined positive *Aspergillus* galactomannan (GM) antigen from serum and/or endobronchial secretion with a cut-off value of > 0.5 index using Platelia *Aspergillus* Ag EIA (Bio-Rad Laboratories, Marnes-La-Coquette, France). PM (PM2.5 or PM10) as an index of air pollution was obtained from Taiwan Air Quality Monitoring Network. Spearman’s correlation was used to measure the association between two variables.

RESULTSÂ Â Â Â

Overall, 544 non-repetitive IPA patients were identified, including 340 and 204 patients in the first and second stage respectively. In the first stage (2015-2018), Flu A (H1N1) influenza, circulated predominantly in 2016, was not correlated to IPA in 2016 but had a significant effect on IPA from 2015 to 2018. Air pollution (PM2.5 and PM10) levels in Tainan were significantly correlated with IPA in 2018 and 2015-2018. In the second stage (2019), influenza A (H1N1) but not PM2.5 nor PM10 in Tainan reached statistical significance in correlation with IPA. Throughout the two stages (2015-2019), IPA was epidemiologically linked to influenza (p =

0.002), H1N1 (p = 0.000) and PM2.5 (p = 0.040) in Tainan City. Continuously prospective observations in the future years are mandatory to figure out the impact of air pollution on IPA.

CONCLUSIONÂ Â Â Â

Overall, IPA case was significantly correlated with local air pollution (PM2.5) as well as H1N1 and influenza epidemic. However, the significant correlation of IPA with air pollution or influenza was not universal in each year, probably influenced by the dynamic change of epidemic scale in influenza, particularly H1N1 which seemed predominantly circulate in some years. We postulated that some PM2.5-related environmental fungal spores could contribute to the development of IPA especially in the vulnerable hosts with H1N1 or influenza during the epidemic.

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EFFECT OF THE UNDERLYING MALIGNANCY ON CRITICALLY ILL SEPTIC PATIENTÂ€™S OUTCOME: A PROPENSITY SCORE-MATCHED ANALYSIS

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INTRODUCTIONÂ Â Â Â

Sepsis is an important cause of mortality and morbidity among critically ill patients with underlying malignancy. 1-3 This study evaluates the clinical characteristics and outcomes of critically ill septic cancer patients in comparison to those without underlying malignancy.

METHODSÂ Â Â Â

Patients with a primary diagnosis of sepsis who were admitted to the intensive care unit (ICU) of the Pamela Youde Nethersole Eastern Hospital from 1 Jan 2010 to 30 Apr 2019 were recruited. Those without significant bacterial culture findings within 72hrs of ICU admission were excluded. Patients were followed till 365 days from ICU admission or death, whichever occurred earlier. Demographics, diagnosis, clinical characteristics, laboratory parameter and outcome data were analyzed. Those with underlying active malignancy were matched with those without malignancy using propensity score matching method based on their severity of organ failure (defined by the sequential organ failure assessment SOFA score) and septic source.

RESULTSÂ Â Â Â

A total of 263 patients with underlying active malignancy were matched with 259 patients without malignancy. The source of sepsis, SOFA score and APACHE IV acute physiology score showed no significant difference between groups. Pulmonary, gastrointestinal and urological sepsis was the most commonly encountered septic sources. Those with malignancy had higher APACHE IV score (89 vs. 83) and APACHE IV predicted risk of death (0.45 vs. 0.35), lower albumin (22.1 vs 24.4), haemoglobin (8.0 vs. 9.8), platelet level (113 vs. 126), less use of mechanical ventilation (35.7 vs. 45.9%), renal replacement therapy (22.1 vs. 28.2%) and vasopressor support (66.2 vs. 74.9%), excessive 30-day (34.2 vs. 24.3%), ICU (22.4 vs. 18.9%), hospital (41.1 vs. 27.4%) and 1-year (62.4 vs. 36.7%) mortality when compared with those without malignancy. Cox regression analysis showed that only APACHE IV score and the presence of pulmonary sepsis independently predicted 30-day mortality, while underlying malignancy, APACHE IV score, low haemoglobin level, use of vasopressor, presence of urosepsis predicted 1-year mortality.

CONCLUSIONÂ Â Â Â

Disease severity and the presence of pulmonary sepsis, but not underlying malignancy, predicated short-term mortality among those critically ill septic patients. ICU admission for those patients with malignancy but good performance status can be considered if resources allow, especially for gastrointestinal and urological sepsis.

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INFLUENCE OF VENTILATION STRATEGIES ON GAS DISTRIBUTION BY EIT AFTER CARDIAC SURGERY WITH CARDIOPULMONARY BYPASS

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INTRODUCTIONÂ Â Â Â

Atelectasis is one of the main reasons causing complications after cardiac surgery. Cardiopulmonary bypass (CPB) during surgery may lead to atelectasis and lung injury [1]. Mechanical ventilation during CPB with low tidal volume and positive end-expiratory pressure (PEEP) may improve lung function but influence operation field at the same time, which is undesired. The aim of the study was to examine if various ventilation strategies after CPB may improve ventilation distribution.

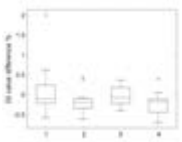
METHODSÂ Â Â Â

The study was designed to randomize patients scheduled for cardiac surgery with CPB to 4 ventilation groups: (1) intermittent mandatory ventilation (IMV), tidal volume 7ml/kg, inspiration to expiration time ratio (I:E) 1:2; (2) IMV+PEEP:6cmH2O; (3) IMV+I:E 1:1; (4) IMV+PEEP: 6cmH2O +I:E 1:1. Blood gasses, hemodynamics and other outcome parameters were collected. Ventilation distribution was analyzed with electrical impedance tomography(EIT) before CPB (after induction of anesthesia) and after surgery (the end of the surgery) [2].

RESULTSÂ Â Â Â

Up to now, 50 patients were included and analyzed (n=13 in groups 1 & 4, n= 12 in groups 2 & 3). Demographics were comparable in different groups. Investigated outcome parameters showed no significant differences as well. Global inhomogeneity analyzed by EIT was improved in groups 2 ,3 & 4 with statistically (Fig. 1). Center of ventilation(CoV) after surgery was highly correlated to patient's body-mass index.

Figure 1. Ventilation distribution changes after CPB assessed by EIT. Different groups are (1) intermittent mandatory ventilation; (2) IMV+PEEP; (3) IMV+I:E ratio 1:1; (4) IMV+PEEP+I:E 1:1. GI, global inhomogeneity, a measure derived from EIT. The lower the GI value is, more homogeneous the ventilation distribution is. *P<0.05, significantly diffrtent from the 1 group by the statistical method of multiple regression analysis.



CONCLUSIONÂ Â Â Â

Ventilation strategies with IMV added one of PEEP or reverse IE ratio might be able to improve ventilation after surgery with CPB analyzed with EIT.

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THIAMINE DEFICIENCY IN PATIENTS ADMITTED TO INTENSIVE CARE WITH SEPSIS AND SEPTIC SHOCK (TRESS): A PROSPECTIVE EPIDEMIOLOGICAL PILOT STUDY

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INTRODUCTIONÂ Â Â Â

Sepsis is life-threatening organ dysfunction due to dysregulated host response to infection.

Progression from sepsis to septic shock and multi-organ failure has been hypothesized to arise in part as a consequence of mitochondrial dysfunction, which has been demonstrated to be associated with adverse outcomes in sepsis.

Thiamine is an important factor in the Krebs cycle. Transketolase is the main thiamine dependent enzyme and is important in lipid and carbohydrate metabolism. True thiamine deficiency is rarely observed in highly developed countries, however relative deficiency/hypovitaminosis B1 may occur due to dietary deficiencies, as a result of specific disease states, the use of certain medications or secondary to alcohol. Thiamine deficiency has previously been reported in one third of American patients with severe sepsis, and thiamine administration was suggested to improve outcomes in that cohort. The incidence of thiamine deficiency in Australian patients with severe sepsis is unknown and may be less than in the USA.

OBJECTIVESÂ Â Â Â

The aim of this prospective low risk observational pilot study was to determine the prevalence and incidence of baseline thiamine deficiency in patients admitted to the Intensive Care Unit with sepsis and septic shock. A secondary aim was to determine if transketolase levels change over time.

METHODSÂ Â Â Â

Blood samples for red cell transketolase levels were taken at ICU admission, 24, 48 and 72h after admission.

RESULTSÂ Â Â Â

20 patients were included in this pilot study. Data at baseline, 24 and 48h were collected for all patients. 13 patients remained in ICU at 72hrs and had a third blood sample collected. At baseline, no patients had thiamine deficiency and transketolase levels did not change over time. 5 patients received thiamine supplementation during the study.

CONCLUSIONÂ Â Â Â

This study is important because thiamine deficiency has been demonstrated to increase lactate concentration in patients with septic shock. It is unclear how this relates to mortality, as patients were not screened for thiamine deficiency prior to study enrolment in previous studies. Based on the preliminary data from this pilot study, we propose that thiamine deficiency is rare or non-existent in septic Australian patients and hence treatment that includes thiamine supplementation is unlikely to be beneficial in the treatment for sepsis in this patient cohort. This warrants confirmation in a larger study including more diverse populations.

THE IMPACT OF METFORMIN ON SURVIVAL BENEFIT AND PREVENTION OF LIVER METASTASES IN OPERABLE COLORECTAL CANCER PATIENTS

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INTRODUCTIONÂ Â Â Â

Colorectal cancer is one of the most common cancer in the Western would and 1st incidence and 3rd mortality in Taiwan and diabetes is proven to be an independent risk factor in occurrence of colorectal cancer. Metformin is the drug of choice for treatment of type 2 diabetes and has been indicated that may decrease the risk of developing of colorectal cancer.

OBJECTIVESÂ Â Â Â

The aim of this study is to investigate the impact of continuous use of metformin on the survival of diabetic patients after surgery for colorectal cancer.

METHODSÂ Â Â Â

We conducted this retrospective longitudinal cohort study from Taiwanese population-based National Health Insurance Research Database. We identified patients whose colorectal cancer diagnosed and underwent curative surgery during January 2000 to December 2012 combined with type 2 diabetes. After excluding those with missing data, having other cancer, aged <18, and diabetic medicine using less than 28 days before surgery. A total of 12,512 patients were enrolled in our study (9,401 metformin user). We further used propensity score matching (1:1 ratio) to adjust for differences in baseline variables. Finally, 6,222 patients were included in the match cohort. We constructed time-dependent covariates in cox proportional hazard model which adjusting for age, sex, income, CharlsonComorbidity Index (CCI), adapted diabetes complication severity index(aDCSI) and colorectal cancer treatment to examine the impacts of metformin used on survival and cancer progression.

RESULTSÂ Â Â Â

Total 12,512 patients with continuous usage of metformin after surgery for colorectal cancer were enrolled. The average follow-up time of Metformin use group is 58.13±40.25 months and non-Metformin use group is 55.62±39.76 months. The Cox proportional hazard model revealed that continuous metformin use post operation was associated with 5-year survival benefit (HR: 0.23, 95% CI: 0.20-0.26, P<.0001). Furthermore, continuous metformin use also showed a benefit of decreasing liver metastases (HR: 0.83, 95% CI: 0.71-0.97, P=.0169).

CONCLUSIONÂ Â Â Â

Persistent Metformin use is associated with significant survival benefit in diabetes patients with colorectal cancer after operation, which implies a potential anti-tumorigenic effect for metformin. This study showed the decreasing risk of liver metastasis in continuous metformin using patient, which might be worth to be considered the role of metformin in combination treatment with other medication or radiation.

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UPDATED SEDATION USAGE IN CRITICAL ILLNESS PATIENTS: AN GRADE-APPROACH EVIDENCE

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INTRODUCTIONÂ Â Â Â

Clinical practice guidelines for the prevention and management of agitation/sedation in adult patients in the ICU was searched through October 2015 and published on 2018 by the Society of Critical Care Medicine. We aimed to update and provide an GRADE-approach evidence for critical illness patients.

METHODSÂ Â Â Â

We performed systematic search in PubMedâ€□Embase and Cochrane library for retrieving relevant randomized-controlled trials comparing benzodiazepines, propofol or dexmedetomidine with respect to the outcomes of target sedation maintenance, ventilator time, extubation time, ICU mortality, ICU stay or side effects in ICU patients through March 2020. We used the GRADE evidence-to-decision framework to draft the recommendations.

RESULTSÂ Â Â Â

One hundred and three publications were included in qualitative analysis. Considering the risk of delirium, hypotension or bradycardia, very low certainty of evidences recommended against of midazolam, dexmedetomidine and/or propofol, or dexmedetomidine in high risk groups, respectively. In the outcome of maintaining target sedation time, low certainty of evidence suggested propofol than midazolam in mechanical-ventilator (MV) medical patients, mean differences were 9% (95% CI 3-15%); Very low certainty of evidences showed that dexmedetomidine and propofol significantly decreased extubation time than midazolam by 0.21-28.41 and 0.36-8.63 hours. Comparing propofol to dexmedetomidine on the outcome of extubation time, the results were varied in different ICUs. ICU stay was significantly decreased in CVS or anticipated extubation population receiving dexmedetomidine comparing to propofol in very low to moderate level of evidences, decreased range of 0.49-6.8 days. Overall, the ICU mortality did not differed in all subgroups.

CONCLUSIONÂ Â Â Â

The certainty of evidences ranged from very low to moderate. The recommendation of sedation usage should be individualized based on subgroups and the risk/benefit considerations.

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THE EFFECTS OF HYDROXYCHLOROQUINE IN HOSPITALIZED PATIENTS WITH COVID-19: UPDATED META-ANALYSIS WITH TRIAL SEQUENTIAL ANALYSIS

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INTRODUCTIONÂ Â Â Â

The coronavirus disease 2019 (COVID-19) outbreak had caused a global health and financial crisis. Until June, 2020, more than ten million people worldwide have been infected; however, the specific treatments remains investigational. Hydroxychloroquine, a classic agent derived from chloroquine to treat rheumatological diseases, expressed activity against the novel coronaviruses in vitro [1]. The aim of study using meta-analysis with trial sequential analysis is to evaluate the effects of hydroxychloroquine in overall mortality among patients with COVID-19.

OBJECTIVESÂ Â Â Â

To compare overall mortality in patients with COVID-19 taking hydroxychloroquine alone, or with a macrolide versus conventional therapy.

METHODSÂ Â Â Â

Comprehensive searches of Pubmed, Google scholar, MedRxiv, PrePrints and grey literature was performed until June 30, 2020 to identify all relevant trials with screening the titles and reviewing the abstracts. Odds ratio (OR) with 95% confidence intervals (CI) was estimated using random-effects model. A relative risk reduction was calculated according to the mean of the event proportions for both intervention and control arms. Trial sequential analysis (TSA) software was used to conduct random-effect TSA.

RESULTSÂ Â Â Â

Meta-analysis of 15 studies (n = 18,869) showed there was no difference regarding overall mortality in patients with COVID-19 received hydroxychloroquine compared with the control (OR 1.07; 95% CI 0.80–1.43; $I2$ = 82%, Cochran Q p-value < 0.01). TSA of overall mortality demonstrated intervention event proportion of 13.96%, control event proportion of 18.99%, and diversity of 89%. The adjusted TSA OR with 95% CI was 1.05 with 0.74–1.48. The cumulative Z-curve did not crossed the conventional boundary, and the required information size of 15,525 (vertical solid red line) has been excessed, confirming the hydroxychloroquine has no difference compared with the control, the current meta-analysis is robust and authentic.

CONCLUSIONÂ Â Â Â

This study demonstrates use of hydroxychloroquine among patients with COVID-19 has no benefit in reducing overall mortality.

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CONTAMINATION OF PERSONAL MOBILE PHONES BY MULTIDRUG RESISTANT ORGANISMS AMONG INTENSIVE CARE DOCTORS

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INTRODUCTIONÂ Â Â Â

Mobile phones have become an essential part of life and are not infrequently assessed during clinical care, for example to browse references or communicate with colleagues. While the use of mobile phones can improve patient care, they are also potential vehicles for spread of pathogenic organisms, which is particularly problematic among critically ill patients.

OBJECTIVESÂ Â Â Â

The objectives are to study the prevalence of contamination of ICU doctors' mobile phones by multidrug resistant organisms (MDROs) and factors associated with increased risk of contamination by MDROs.

METHODSÂ Â Â Â

Doctors working in the Intensive Care Units of 3 hospitals (Queen Elizabeth Hospital, Kwong Wah Hospital, Prince of Wales Hospital) were recruited. They filled in questionnaires about their demographics; patterns of usage and disinfection of mobile phones. Swabs were taken from their mobile phones' front and back surfaces and sent to the microbiology laboratory of Queen Elizabeth Hospital. These swabs were processed and inoculated on selective culture media for the detection of MDROs, namely Carbapenemase-Producing Enterobacteriaceae (CPE); multidrug resistant *Acinetobacter baumannii* (MDRA); methicillin resistant *Staphylococcus aureus* (MRSA); Vancomycin resistant *Enterococcus* (VRE).

RESULTSÂ Â Â Â

Forty-one ICU doctors with 44 mobile phones were sampled (1 doctor with 4 mobile phones). No MDROs were detected. Twelve doctors (29.3%) had never cleaned their phones while 5 (12.2%) cleaned with water, others (58.5%) cleaned the mobile phones with alcohol or other disinfectants. Forty doctors (97.6%) reported using their phone during clinical duties. Mostly, personal mobiles were used to search information and carry out administrative work. Two doctors (4.9%) used protective coverage for the mobile phones. Twenty-eight (68.3%) believed that their mobile phones were contaminated by MDROs. Only 1 doctor (2.4%) supported banning the use of personal mobile phones at work.

CONCLUSIONÂ Â Â Â

Use of personal mobile phones are common during clinical duties. None of the mobile phones sample were contaminated with MDROs, which could be related to good adherence to infection control measures.

ANTITHROMBIN III DEFICIENCY-INDUCED COAGULOPATHY IN THE CONTEXT OF COVID-19 DISEASE

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INTRODUCTIONÂ Â Â Â

A coagulopathy associated with COVID-19 has been repeatedly described1. Diffuse endothelial inflammation has been reported affecting both the renal and pulmonary vasculature on autopsy2,3. A consequence of this appears to be widespread thrombi formation; the affected organs are hypothesised to determine the phenotype of the disease. Significant elevations of D-dimer and fibrinogen are common and strong predictors of mortality4. Hence, the use of routine anticoagulation has been proposed as a therapeutic modality.

Observing the increased incidence of thromboembolic events amongst COVID-19 patients, a multidisciplinary decision was taken to increase our standard dose of thromboprophylaxis. A low threshold for therapeutic anticoagulation was adopted. Heparins are often the anticoagulant of choice, being titratable, versatile, reversible. However, we observed difficulties achieving therapeutic anticoagulation. This was especially evident for patients receiving renal replacement therapy (RRT), who had increased coagulation-related complications. In response, we began anticoagulating RRT circuits with epoprostenol (Ci-Ca unavailable) and using direct thrombin inhibitors for systemic anticoagulation.

OBJECTIVESÂ Â Â Â

We hypothesised that an acquired deficiency of antithrombin III (ATIII), related to the COVID-19 pathology, was the causative mechanism. Hence, to investigate this we assessed the prevalence of ATIII deficiency within our ICU patient population during a three-week period.

METHODSÂ Â Â Â

Within the analysis period, we tested 19 patients admitted to our District General Hospital intensive care unit (ICU) in South London. Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection had been diagnosed by reverse-transcriptase polymerase-chain reaction and/or compelling radiographic evidence.

RESULTSÂ Â Â Â

Five had serologically low ATIII levels, representing 26.3% of the sample. Of these, two subsequently developed bilateral pulmonary emboli despite heparin. One received ‘therapeutic’ intravenous therapy, the other, ‘prophylactic’ low-molecular-weight heparin. Both patients presented with typical features of COVID-19 disease. After brief periods of external oxygen therapy and CPAP, they progressed to hypoxemic respiratory failure requiring intubation and ventilation.

CONCLUSIONÂ Â Â Â

ATIII deficiency is uncommon, either being acquired or a rare autosomal hereditary disorder5. It results in a prothrombotic state, given ATIII's usual function of inactivating thrombin, factor Xa and other proteases. Heparins function as an anticoagulant by potentiating ATIII activity, up to 1000-fold. This may explain its lack of efficacy in our patients.

Physicians could consider the regular testing of ATIII titres for COVID-19 patients. If deficient a mechanistically alternative form of anticoagulation, or ATIII replacement therapy, may be warranted. Careful thought should be given to pre-emptive therapeutic anticoagulation.

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EA Oral presentation 1

AKI BIOMARKERS ARE USEFUL FOR PREDICTING INITIATION OF RENAL REPLACEMENT THERAPY AND PROGNOSIS IN PATIENTS WITH SEPTIC SHOCK

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INTRODUCTIONÂ Â Â Â

Sepsis induced acute kidney injury (AKI) is associated with high morbidity and mortality in intensive care unit (ICU). In recent years, novel AKI biomarkers such as NGAL, L-FABP, IGFBP-7, TIMP-2 have been discovered and validated to improve early detection for progressive renal failure, need for renal replacement therapy (RRT), or mortality.

OBJECTIVESÂ Â Â Â

This study was to evaluate whether urinary AKI biomarkers, especially urinary L-FABP (uL-FABP) and urinary NGAL (uNGAL) at ICU admission can predict initiation of RRT and mortality in septic shock patients.

METHODSÂ Â Â Â

This was a single-center, retrospective, observational study of patients with septic shock admitted in our ICU from August 2018 to January 2020. Patients measured uL-FABP and uNGAL at ICU admission were included. Patients with maintenance dialysis and anuria were excluded. We examined the relation of uL-FABP and uNGAL levels at ICU admission and initiation of RRT, 28-day mortality.

RESULTSÂ Â Â Â

A total of 37 patients were included. Median age was 74 years (IQR 67-79) and 24 patients (64.9%) were male. 12 patients (32.4%) had chronic kidney disease and 31 patients (83.8%) acquired AKI based on KDIGO criteria. Median uL-FABP (ng/ml) and uNGAL (ng/ml) level was 88 (IQR 39.3-309) and 861 (IQR 412-2340), respectively. Median SOFA score and APACHE2 score was 9 and 19, respectively. 31 patients (83.8ï¼…) had received mechanical ventilation and 11 patients (29.7ï¼…) had received RRT. 28-day mortality was 21.6%. The sensitivity and specificity of uL-FABP level for predicting initiation of RRT was 84.0% and 60.0% (area under the ROC curve 0.752, 95% CI: 0.547-0.957) at 250.0 ng/ml. The sensitivity and specificity of uNGAL level for predicting initiation of RRT were 84.0 and 80.0% (area under the ROC curve 0.872, 95% CI: 0.731-1.000) at 1540.0 ng/ml. The patients were divided into 2 groups according to the quartiles of uL-FABP and uNGAL levels (Q1 and Q2 = low group [L] vs. Q3 and Q4 = high group [H]). Kaplan-Meier curves showed 28-day mortality was higher in group H than in group L (p=0.0268) evaluated by uNGAL. But there were no significant differences between the groups evaluated by uL-FABP(p=0.877).

CONCLUSIONÂ Â Â Â

Both uL-FABP and uNGAL are useful for predicting initiation of RRT in septic shock patients. uNGAL is better for predicting mortality in septic shock patients than uL-FABP.

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LONG-TERM EXPOSURE TO CARBON DIOXIDE INHALATION INDUCES ENDOPLASMIC RETICULUM STRESS AND PROMOTES LUNG INJURY IN MICE

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INTRODUCTIONÂ Â Â Â

Hypercapnic respiratory acidosis is a poor prognostic factor for acute respiratory distress syndrome. The mechanisms underlying this association are unknown. We recently showed that pre-treatment with ten-minute, but not sixty-minute, carbon dioxide inhalation prevents lipopolysaccharide-induced lung injury in mice.

OBJECTIVESÂ Â Â Â

To investigate the mechanisms of long-term hypercapnia-induced lung injury.

METHODSÂ Â Â Â

C57BL/6 mice were randomly divided into a control (CTL) group or a hypercapnia (HCA) group. Each HCA group were exposed to 7.5% carbon dioxide inhalation for 24, 48, 72, and 96 hours, respectively. Bronchoalveolar lavage fluid (BALF) and lung tissues were collected to evaluate the degree of inflammation, apoptosis, endoplasmic reticulum stress and lung injury.

RESULTSÂ Â Â Â

Carbon dioxide inhalation significantly increased the ratio of lung weight to body weight; concentrations of BALF protein, activity of BALF LDH; neutrophil infiltration; and lung injury score. Mover, carbon dioxide inhalation induced pulmonary apoptosis (TUNEL assay) and increased endoplasmic reticulum (ER) stress. The expressions of the major sensors of misfolded proteins, including protein kinase R-like ER kinase (PERK), Inositol-requiring enzyme 1 (IRE1), and activating transcription factor 6 (ATF6), were increased. Furthermore, treatment with 4-Phenylbutyrate (4PBA), a well-established chemical chaperone and inhibitor of ER stress, significantly suppressed hypercapnia-induced pulmonary edema and lung injury.

CONCLUSIONÂ Â Â Â

Our work suggests that ER stress participate in the pathogenesis of hypercapnia-induced lung injury. In the future, ER stress inhibitor might protect against hypercapnia-induced lung injury.

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3. CHNDMC-109-9 from the Cheng-Hsin Hospital, Taipei, Taiwan
4. MAB-109-021 from the National Defense Medical Center, Taipei, Taiwan

GAS EXCHANGE OF PRONE POSITIONING IN INFLUENZA PNEUMONIA-RELATED ACUTE RESPIRATORY DISTRESS SYNDROME: A MULTICENTER RETROSPECTIVE COHORT STUDY IN TAIWAN

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INTRODUCTIONÂ Â Â Â

Prone positioning has demonstrated decreased mortality in severe acute respiratory distress syndrome (ARDS) patients. The improvement of gaseous-exchange responses is the earliest effect of the prone positioning, but whether this effect related to clinical outcome is still controversial.

OBJECTIVESÂ Â Â Â

The aim of this study was to investigate the effect of prone positioning in patients with influenza pneumonia-related severe ARDS.

METHODSÂ Â Â Â

This retrospective study includes eight tertiary referral centers. All the patients with influenza pneumonia induced severe ARDS and receiving prone positioning were enrolled. Demographic data, laboratory data, treatment record, ventilator setting data and outcomes were collected. PaO2 responders were defined as the PaO2/FiO2 ratio increasing by ≥20% or ≥20 mm Hg, while PaCO2 responders were defined as PaCO2 decreasing by ≥1 mm Hg after prone positioning for one day.

RESULTSÂ Â Â Â

Sixty-five patients receiving prone positioning were enrolled, with 36 (55%) were PaO2 responders and 33 (51%) were PaCO2 responders. Mortality rates were not significantly different between responders and non-responders. PaCO2 responder survivors had significantly higher ventilator free days at day 30 (9.2 ± 9.5 vs. 4.8 ± 6.9, $P = 0.036$), shortened length of stay at the ICU (21.1 ± 16.0 vs. 37.6 ± 26.5 days, $P = 0.022$) and hospital (30.4 ± 18.9 vs. 37.6 ± 26.5 days, $P = 0.008$) than did non-responders. In subgroup of patients with low tidal volume, early prone positioning or hypercapnia in pre-prone positioning, patients with PaCO2 decrease more than 3 mm Hg have significant lower 60 days mortality rate.

CONCLUSIONÂ Â Â Â

In this multicenter retrospective cohort study of influenza pneumonia patients with severe ARDS receiving prone positioning, patients with PaCO2 decrease more than 3 mm Hg had better clinical outcomes in specific patient groups.

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RECLASSIFYING SEVERITY AFTER 48 HOURS COULD BETTER PREDICT MORTALITY IN ACUTE RESPIRATORY DISTRESS SYNDROME

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INTRODUCTIONÂ Â Â Â

The disease severity may change in the first week after ARDS onset. The aim of this study was to evaluate whether the reclassification of disease severity after 48 hours (i.e., day 3) of ARDS onset could help in predicting mortality and determine factors associated with ARDS persistence and mortality.

METHODSÂ Â Â Â

We performed a secondary analysis of a three-year prospective, observational cohort study of ARDS in a tertiary care referral center. Disease severity was reclassified after 48 hours of enrollment, and cases that still fulfilled the Berlin criteria were regarded as nonresolving ARDS.

RESULTSÂ Â Â Â

A total of 1,034 ARDS patients were analyzed. Overall hospital mortality was 57.7 % (56.7 %, 57.5 %, and 58.6 % for patients with initial mild, moderate, and severe ARDS, respectively, p = 0.189). On day 3 reclassification, the hospital mortality rates were as follows: resolved (42.1 %), mild (47.9 %), moderate (62.4 %), and severe ARDS (76.1 %) ($p < 0.001$). Patients with improving severity on day 3 had lower mortality (48.8 %), whereas patients with the same or worsening severity on day 3 had higher mortality (62.7 % and 76.3 %, respectively). Patients who were older, had lower PaO2/FiO2, or higher PEEP on day 1 were significantly associated with nonresolving ARDS on day 3. Cox regression model with ARDS severity as a time- dependent covariate and competing risk analysis demonstrated that ARDS severity was independently associated with hospital mortality, and nonresolving ARDS had significantly increased hazard of death than resolved ARDS ($p < 0.0001$). Cumulative mortality curve for ARDS severity comparisons demonstrated significantly different (overall comparison, $p < 0.001$).

CONCLUSIONÂ Â Â Â

Reclassification of disease severity after 48 hours of ARDS onset could help to divide patients into subgroups with greater separation in terms of mortality.

RENAL REPLACEMENT THERAPY IN PATIENTS WITH INFLUENZA PNEUMONIA RELATED ACUTE RESPIRATORY DISTRESS SYNDROME

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INTRODUCTIONÂ Â Â Â

Renal replacement therapy (RRT) would increase mortality in severe acute respiratory distress syndrome (ARDS) patients. The aim of this study was to investigate the outcome and predictors for RRT in patients with influenza pneumonia-related severe ARDS.

METHODSÂ Â Â Â

This retrospective cohort study includes eight tertiary referral centers in Taiwan. All the patients with influenza pneumonia related severe ARDS were enrolled. We collected the demographic data, laboratory data, ventilator setting data, treatment record, and outcomes.

RESULTSÂ Â Â Â

There were 282 patients with influenza pneumonia met the criteria of acute respiratory distress syndrome (ARDS). Thirty-four patients suffered from acute kidney injury (AKI) that needed RRT, and 16 patients had the underlying end stage renal disease that needed RRT. The 30 days and 60 days mortality were significant higher in patients with AKI induced RRT (50.0% vs 19.8%, *p* value < 0.001; 58.8% vs 27.2%, *p* value = 0.001, respectively), but the patients with ESRD related RRT had no significant difference of mortality (12.5% vs 19.8%, *p* value = 0.473; 31.3% vs 27.2%, *p* value = 0.722, respectively). The predictors for patients were prone to suffer form AKI induced RRT including underlying chronic liver disease (Odds ratio: 5.446, *p* value=0.031) and C-reactive protein (Odds ratio: 1.078, *p* value=0.036). The mortality predictors for patients with AKI induced RRT including pneumonia severity index (Hazard ratio: 1.037, *p* value=0.002), tidal volume/predicted body weight (Hazard ratio: 1.541, *p* value=0.022), and CRRT (Hazard ratio: 4.752, *p* value=0.045).

CONCLUSIONÂ Â Â Â

In this multicenter retrospective cohort study, the influenza pneumonia related ARDS patients with AKI induced RRT had significantly higher mortality. The pneumonia severity index, low tidal volume ventilation and CRRT usage are the most important factors to determine the patient’s survival.

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MECHANICAL POWER CORRELATES WITH MORTALITY OF PATIENTS WITH ARDS IN A PROSPECTIVE OBSERVATIONAL COHORT

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INTRODUCTIONÂ Â Â Â

Mechanical power (MP) of ventilation has been hypothesized as a unifying variable for ventilator-related causes of lung injury. Recent studies revealed that increased MP was associated with increased mortality in patients with acute respiratory distress syndrome (ARDS) and critically ill patients receiving invasive ventilation. Equations consist of important ventilator parameters were conducted for calculation of MP as an approximation of energy delivered to lung tissue by the ventilator. However, different equations are needed for different ventilation modes, such as volume-controlled ventilation (VCV) and pressure-controlled ventilation (PCV). Studies about the MP in PCV and its correlation with outcomes in ARDS patients are currently lacking.

OBJECTIVESÂ Â Â Â

To analyze the correlation of MP in PCV and in-hospital mortality of ARDS patients.

METHODSÂ Â Â Â

Re-analysis of data from a 3-year prospective, observational cohort study conducted in a tertiary referral hospital in Taiwan. Patients admitted to intensive care units with invasive mechanical ventilation were screened for ARDS. The diagnosis and severity of ARDS were determined according to the Berlin definition. Demographic data, laboratory data, ventilator setting, and clinical outcomes were collected for analysis. All patients were ventilated with PCV mode at enrollment. MP was calculated by using the equation for PCV as equal to 0.098 ×RR×VT×(âˆ†Pinsp + PEEP), where RR is the respiratory rate, VT is the tidal volume, âˆ†Pinsp is the change in airway pressure during inspiration and PEEP is the positive end-expiratory pressure.

RESULTSÂ Â Â Â

From September 2012 to May 2015, a total of 1034 patients met the diagnosis of ARDS. After exclusion (expired within 3 days of ICU admission, n = 59; survived but ventilator use less than 3 days, n = 24; and data missing, n = 5), we enrolled 947 patients for analysis. The overall in-hospital mortality rate was 56.8%.

In baseline demographic data, survivors had significantly younger age, higher body mass index (BMI), lower Charlson comorbidity index, APACHE-II, MODS, and SOFA scores as compared to non-survivors. The distribution of mild, moderate, and severe ARDS between survivors and non-survivors was similar. On day 1 of ARDS, peak inspiratory pressure (PIP) and dynamic driving pressure (DP) were significantly lower in survivors as compared to non-survivors; other

ventilator variables, including VT of predicted body weight (PBW), PEEP, RR, and MP were similar. On day 3 of ARDS, MP was significantly lower in survivors (24.8±10.9 j/min) versus non-survivors (30.5±11.9 j/min, $p < 0.001$). PIP, dynamic DP, PEEP, RR, and dynamic compliance were also significantly lower in survivors versus non-survivors on day 3 of ARDS; while VT of PBW did not show significant differences between survivors and non-survivors on both day 1 and day 3 of ARDS. Mechanical power on day 3 with a cutoff point of 30.6 j/min exhibited the best Youden index; the overall survival rate of ARDS patients with MP ≤ 30.6 j/min was significantly higher than those with MP > 30.6 j/min (52.8 vs. 27.9%, $p < 0.001$ by log-rank test).

CONCLUSIONÂ Â Â Â

Mechanical power calculated by the equation for PCV was associated with mortality in ARDS patients.

ANALYSIS OF SERIAL CHANGE OF DRIVING PRESSURE: EFFECTS ON SURVIVAL IN PATIENTS WITH ACUTE RESPIRATORY DISTRESS SYNDROME RECEIVING LUNG-PROTECTIVE VENTILATION

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INTRODUCTIONÂ Â Â Â

Driving pressure (DP) is an important predicting factor for the mortality of acute respiratory distress syndrome (ARDS), but patients with early ARDS usually have multiple contributing factors leading to hemodynamics and oxygenation instability. We propose a hypothesis that serial change of daily DP could predict outcome of ARDS patients.

METHODSÂ Â Â Â

This retrospective study enrolled patients admitted to the intensive care unit (ICU) who met the criteria for ARDS and lung protection strategies were implemented, between March 2009 and January 2018 in four ICUs in Chi-Mei hospital. The DP was recorded daily after ARDS was diagnosed for three consecutive days and analyzed for the correlation with 60-day survival. Patients were divided into four groups, according to the daily changes in DP, which are low DP group (day1 DP<14cmH2O & day3 DP<14cmH2O), decrement group (day1 DPâ‰§14cmH2O & day3 DP<14cmH2O), high DP group (day1 DPâ‰§14cmH2O & day3 DPâ‰§14cmH2O) and increment group (day1 DP<14cmH2O & day3 DPâ‰§14cmH2O).

RESULTSÂ Â Â Â

A total of 224 patients were enrolled into final analysis. Overall ICU & 60-day survival rate was 64.7% & 52.7%, respectively. The DP on day 1, day 2, & day3 was significantly lower in the survival ($p<0.05$). The 60-day survival between four groups was significantly different (Log-rank test, $p=0.0271$) (figure 1). Comparing with the low driving pressure group, no significant differences of the 60-day survival were observed among the decrement group (adjusted hazard ratio, 0.93; 95% confidence interval [CI], 0.46-1.87; $p = 0.8279$) and the high driving pressure group (adjusted hazard ratio, 1.42; 95% CI, 0.9-2.24; $p = 0.1308$). However, the patients in increment group had significantly lower 60-day survival (adjusted hazard ratio, 2.00; 95% CI, 1.15-3.50; $p = 0.0149$).

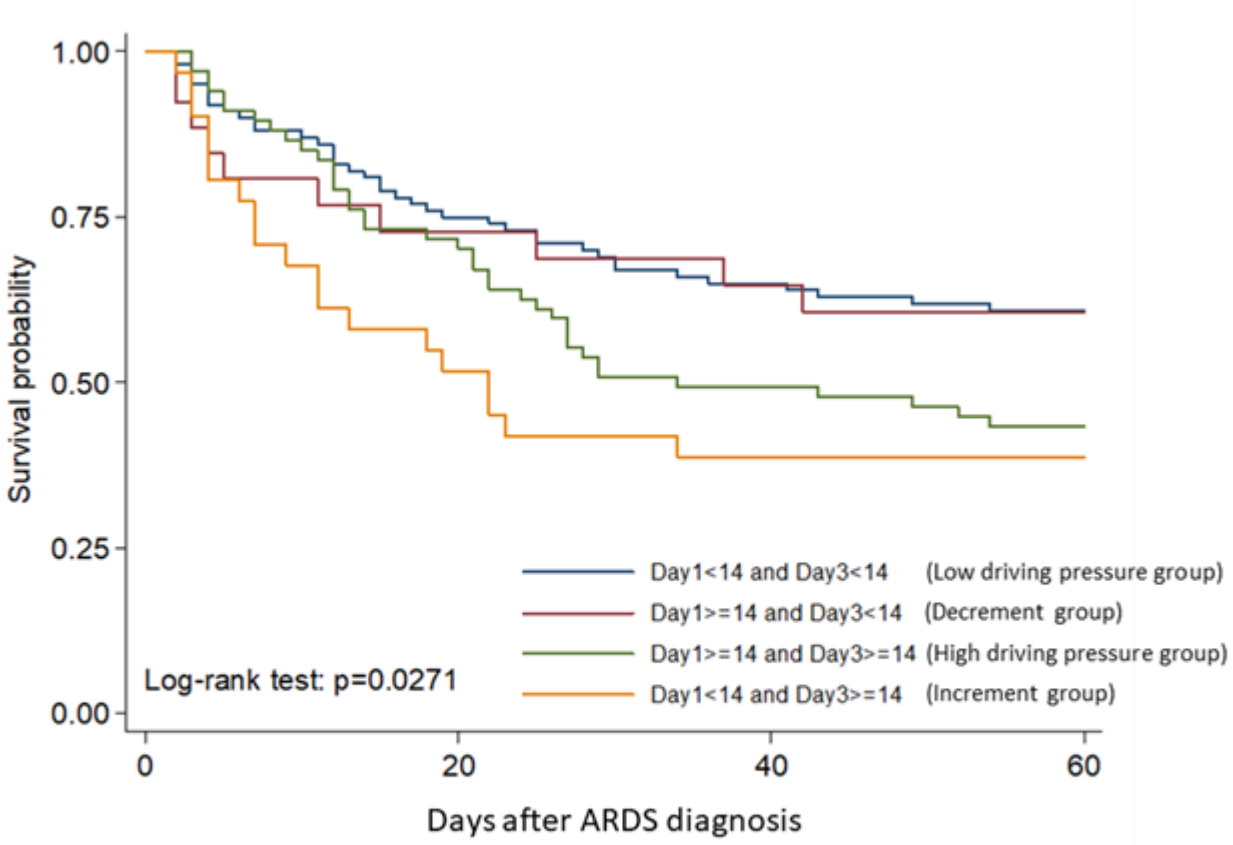

Figure 1. Kaplan-Meier 60-day probability of survival curves for patients with acute respiratory distress syndrome (ARDS). Patients are stratified in for subgroups according to the levels of driving pressure on ARDS day 1& day 3.

CONCLUSIONÂ Â Â Â

Driving pressure remains as an important predicting factor for the survival in the ARDS patients. Low driving pressure should be maintained in the early ARDS to improve patient survival.

OUTCOMES OF PATIENTS RECEIVING RE-INTUBATION WITHIN 24 HOURS IN THE INTENSIVE CARE UNIT

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INTRODUCTIONÂ Â Â Â

Patients in the intensive care unit (ICU) frequently receive tracheal intubation for ventilator support needed. The complication of long-term intubation include the ventilator-associated pneumonia, T-E fistula or deep vein thrombosis due to immobilization. So when the patients' general condition improve, clinicians will wean the ventilator quickly and remove the endotracheal tube as soon as possible. However, even we follow the weaning protocol and extensive evaluation, there was still 10-19% patients will experience extubation failure and need re-intbation.ã€”1-5ã€• Previous studies also reported this event will cause 26-50% in-ICU mortality.ã€”1-5ã€•For the early extubation failure patients, the data about their in-hospital outcome and the factors related to mortality was scarce.

OBJECTIVESÂ Â Â Â

We designed this study to explore the in-hospital outcomes of patients in adult ICU who were re-intubation within 24 hours. We also analyze the possible risk factors related to the poor outcomes.

METHODSÂ Â Â Â

This is a retrospective study conducted in a medical center of Northern Taiwan. Patients aged more than 18 year-old and ventilator used more than 48 hours will be screened. Only patients received planned extubation and re-intubation within 24 hours will be enrolled. The patients' basic characteristics, causes of intubation, causes of re-intubation, length of ICU stay, length of hospital stay and in-hospital outcomes will be recorded according to medical chart. The duration was from January 1, 2016 to December 31, 2018.

RESULTSÂ Â Â Â

During the period, total 79 patients experience 24 hours re-intubation. In these

patients, 38 (48.1%) was male, 37 (46.8%) in surgical ICU. Seventeen (21.5%) had no

any co-morbidity record. The in-hospital mortality was 21.5% (17/79). Only 52

(65.8%) patients weaned the ventilator successfully. In the survey factors, only rapid

shallow breathing index (RSBI) can predict the success of weaning ventilator (51 v.s.

61; p=0.027). There was no factors can predict the hospital mortality. However, if these patients stayed in ICU and ventilator used more than 21 days, that meant poor condition or complication and there was higher in-hospital mortality.

CONCLUSIONÂ Â Â Â

The mortality of early extubation failure patients was 21.5%. Only 65% patients can be weaned the ventilator thereafter. RSBI may be a predictor of extubation failure. ICU stayed more than 21 days is an index of poor outcome.

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2. nil

THE INFLENCE OF DIPYRIDAMLE AND DUAL ANTIPLATELET THERAPY ON STROKE PREVENTION IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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INTRODUCTIONÂ Â Â Â

Dipyridamole based triple antiplatelet therapy (TAPT) on stroke prevention and long-term outcome was unknown. Our study is aimed to evaluate long-term efficacy and safety of dipyridamole based TAPTafter acute myocardial infarction (AMI).

METHODSÂ Â Â Â

This is a nationwide, case–control study involving 186,112 first AMI patients. We adopted a ratio of 1:4 propensity score matching based on multiple variables. Finally, we enrolled4,540 patients in the dual antiplatelet therapy (DAPT) group and 1,135 patients in the TAPT group in our final analysis.

RESULTSÂ Â Â Â

Overall survival rate was comparable between two groups of patients (log-rank P = .0569), regardless ofsex. In age subgroup, TAPT group showed poor survival in younger patients (log-rank P = .0072), but no survival difference compared with DAPT group in older patients.There was no extra benefit of TAPT for patients after AMI regardless of types of myocardial infarction (MI).DAPT was superior to TAPT for patients underwent percutaneous coronary intervention (PCI) (log-rank P = .0022). TAPT did not reduce cumulative event rate of recurrent MI or recurrent stroke in patients after AMI. TAPT increased cumulative intracerebral hemorrhage (ICH) rate (log-rank P = .0026) but did not affect cumulative event rate of gastrointestinal (GI) bleeding free survival. Dipyridamole did not contribute to AMI survival.

CONCLUSIONÂ Â Â Â

TAPTdid not contribute to overall AMI survival, and did not reduce recurrent rate of MI or stroke. TAPT increased ICH ratewithout effect onthe incidence of GI bleeding compared with DAPT.

ASSESSMENT OF DISCOMFORT OF CHINESE CRITICALLY ILL PATIENTS IN ICU USING THE TRANSLATED FRENCH IPREA QUESTIONNAIRE

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INTRODUCTIONÂ Â Â Â

Patients under critical conditions admitted to ICU usually require a series of invasive organ support and therapies. There are under multiple monitoring and have different invasive lines or tubes for medication. Many receive invasive therapies like mechanical ventilation and renal replacement therapy. Frequent patient assessment and nursing care procedures disturbed patients' rest time and they can experience enormous psychological distress and environmental discomfort such as lighting, noise, alarm, room temperature, and post-traumatic stress disorder as a result. There are limited tools to assess ICU patients' discomfort, and this area has often been neglected, until the publication of the Inconforts des Patients de ReAnimation (IPREA) questionnaire, which was a 16-item French questionnaire on quantitative assessment of ICU-related self-perceived discomfort. These items specifically showed the area of discomfort of ICU critically ill patients and they could be identified and quantified.

OBJECTIVESÂ Â Â Â

To identify and quantify predictors of discomfort perceived by ICU survivors in our ICU setting by adapted a French multifaceted discomfort questionnaire (IPREA, Inconforts des Patients de REAnimation)

METHODSÂ Â Â Â

The questionnaire was translated to Chinese and back translated to French to compare with the original to ensure accuracy. A self-administered, translate Chinese version of the IPREA questionnaire was filled out by ICU patients in QEH who stayed in ICU for at least 3 consecutive days on day of discharge by the bedside nurses. Patient admitted in between March to June 2020 were included. The areas where ICU patients felt most discomfort were identified and measures for improvement could be planned. The study was approved by the KC/KE research ethics committee, Hospital Authority, Hong Kong.

RESULTSÂ Â Â Â

Three Hundred patients were recruited in our study during the study period. 53% were male. The mean age was 52.5 +/- 16.5 years old. The mean ICU length of stay was 5+/- 3.68 days. Two hundred and thirty-two (77%) were emergency admission and the rest were elective admission. Ninety-six (32%) of them were medical patient; One (2.63%) was a pediatric patient and the rest were from various surgical departments. One hundred and sixty-five patients (55%) had thirst sensation; 116 (39%) suffered sleep deprivation; 110 (37%) complained of hunger and 94 (31%) complained of pain. Concerning ICU bedside care, the line/tubes or connections to monitoring devices caused discomfort in a large proportion of patients (n=117, 39%). Contrary to our belief,

disturbances or discomfort from environment like noises, lighting and bed were found in less than 30% of the subjects.

CONCLUSIONÂ Â Â Â

Discomfort of ICU patients has long been a neglected area. The study results helped us to identify and quantify the areas of discomfort most suffered by our ICU patients. Specific measures on relieving their discomforts could be planned and enacted according to the results. Particular attention should be paid to the pain, sleep disturbance and their thirst and hunger sensation.

The study data would be further analyzed for validation assessment if the questionnaire can be well applied to our Chinese ICU populations.

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EA Oral presentation 2

CLINICAL CHARACTERISTICS AND OUTCOME OF ELDERLY CARDIAC ARREST PATIENTS WITH TARGET TEMPERATURE MANAGEMENT AS COMPARED WITH YOUNGER COUNTERPARTS

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INTRODUCTIONÂ Â Â Â

Despite the progression of resuscitation care after cardiac arrest (CA), the patient outcomes remain relatively poor with significant mortality and morbidity. There are sparse data on the characteristic of target temperature management (TTM) and outcome, especially in elderly patients. We studied whether elderly patients benefit to the same extent compared with younger patients and the features of TTM between them.

METHODSÂ Â Â Â

This was a multicenter retrospective study analyzing data from TaIwan network of targeted temperature ManagEment for CARDiac arrest (TIMECARD) registry, a retrospective cohort of patients with return of spontaneous circulation (ROSC) and comatose after cardiac arrest who were admitted to critical care unit and received therapeutic hypothermia from January 2014 to September 2019. Elderly patients (â‰§75 years) were compared with younger patients. The primary outcome was good neurological outcome at hospital discharge, defined as a Cerebral Performance Category score 1-2. Multivariable logistic regression was used to determine prediction factors in both populations.

RESULTSÂ Â Â Â

A total of 539 patients were analyzed, of whom 27% (144/539) were elderly patients with a median age of 82 years (78.5-87). Comparing with younger patients, the incidence of initial shockable rhythm, out of hospital cardiac arrest, pre-arrest CPC level were significantly lower in elderly patients. On the other hand, the comorbidities, including hypertension, heart failure, lung disease, chronic kidney disease and malignancy, were higher in elderly patients. The prehospital characteristics of two groups were similar, including the percentage of witnessed collapse, bystander cardiopulmonary resuscitation, down time, and vital signs at ROSC, except the cardiac cause of CA was lower in elderly patients (38.2% vs 60.5%, $P < 0.001$). The features of TTM

were similar in both groups, including pre-induction duration, induction duration, maintaining and rewarming duration. The elderly patients had significantly lower rate of achieving target temperature (93.1% vs 98.2%, p = 0.002) and the younger patients had significantly higher rate of receiving coronary angiography (39.5% vs 19.4%, p< 0.001) and percutaneous coronary angioplasty (32.2% vs 15.3%, p < 0.001). The incidence of adverse events during TTM were similar except higher rate of now-onset serious infection in elderly patients (51.4% vs 41.3%, p = 0.035). The good neurological outcome at discharge was lower in elderly patients with rate of 13.9% versus 24.6% (p= 0.008). The multivariate analysis showed that elderly patients had more limited predcitors:i nitial shock rhythm (OR = 7.47, 95% CI [1.61-34.60]) and diastolic blood pressure at ROSC (OR=1.03, 95% CI [1-1.06 0.05]).

CONCLUSIONÂ Â Â Â

The elderly pateints had a worse risk profile, half of good neurological outcome, and fewer predictors of outcome compared with younger patients. Most characteristics of TTM were similar between elderly and younger patients, except early complications of serious infection and hypokalemia.

1. None

BASELINE FACTORS IDENTIFIED FOR PREDICTION OF GOOD RESPONDERS IN PATIENTS WITH END-STAGE DIFFUSE CORONARY ARTERY DISEASE UNDERGOING INTRACORONARY CD34+ CELL THERAPY

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INTRODUCTIONÂ Â Â Â

There are still lacking useful markers to predict whether heart function will improve in end-stage diffuse coronary artery disease (EnD-CAD) patients who underwent circulatory-derived CD34+ cell therapy. Utilizing the baseline variables and results from our previous phase I/II clinical trials, the aim of this study tried to elucidate the variables predictive of the “good response” to CD34+ cell therapy.

METHODSÂ Â Â Â

This retrospective study included 38 patients in the phase I clinical trial (2011-2014), and 30 patients in the phase II clinical trial (2013-2017). These patients were categorized into “good responders” and “non-responders” according to their 1-year improvement of LVEF ≥7.0% or <7.0% after intracoronary CD34+ cell therapy.

RESULTSÂ Â Â Â

Among baseline data, multivariate analysis demonstrated that history of former smoker was independently predictive of good responders (p=0.006). On the other hand, male gender, the baseline Canadian Cardiovascular Society angina score ≥3 and grades of LV diastolic dysfunction ≥2 were significantly negative predictors of good responders (all p<0.01). After administration of subcutaneous granulocyte-colony stimulating factor (G-CSF), a higher post-G-CSF neutrophil count in addition to the above four baseline variables played crucial roles in early prediction of good response to CD34+ cell therapy for EnD-CAD (all p<0.03). Hosmer–Lemeshow test displayed a good prediction power with sensitivity 83.3%, specificity 85.3% and accuracy 84.4%.

CONCLUSIONÂ Â Â Â

Using the results of our phase I/II clinical trials, we identified several useful baseline and early factors independently predictive of “good response” to CD34+ cell therapy in the patients with EnD-CAD.

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WHAT WE LEARNED FROM THE STEMI PATIENTS COMPLICATED WITH RBBB? EXTENSION OF SGARBOSSA

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INTRODUCTIONÂ Â Â Â

Right bundle branch block (RBBB) has been mentioned as a possible ECG manifestation of ST elevation myocardial infarction (STEMI) and associated with worse outcome. Whether the rationale of Sgabossa criteria can be applied to patients with presumed new-onset RBBB needs to be elucidated.

METHODSÂ Â Â Â

The target study population is the patients diagnosed as STEMI presenting with presumed new-onset RBBB from Jan 2010 to Oct 2018 in three hospitals in a health-care system in Taiwan. Demography, laboratory tests, ECG, coronary angiograms were included for analysis. We extended the rationale of Sgarbossa and modified Sgarbossa criteriain those presenting with RBBB. The developed ECG criteria in patients with RBBB include at least one of the following: (1) the presence of concordant ST changes in any two contiguous leads, (2) ST deviation more than 0.5mV in the leads of discordant ST changes, or (3) the ratio of ST deviation over the amplitude of T waves exceeding 25%. The sensitivity, specificity, negative predictive value and positive predictive value are calculated.

RESULTSÂ Â Â Â

Of 982 STEMI patients in the study period, there are 112 fulfilling the above criteria, including 64 with existing RBBB and 48 with new-onset or presumed new-onset RBBB. There are 86 patients with concordant ST changes (58 for old RBBB and 28 for new-onset), 16 with discordant ST deviations more than 0.5mV (4 and 12) and 10 with the ratio of ST deviation over the amplitude of T waves exceeding 25%. (2 and 8). In consideration of another 21 patients with RBBB but not fulfilled the above criteria and 80 non-STEMI with chest pain and RBBB, the overall sensitivity, specificity, PPV and NPV for criteria (1) are 80%, 100%, 100% and 70%, respectively.

CONCLUSIONÂ Â Â Â

Our proposed criteria have been proven to be of high specificity and PPV in diagnosing STEMI among patients with new-onset or pre-existing RBBB.

SHORTEN THE COURSE OF SEPSIS BUNDLE CARE FOR PATIENTS WITH SEPSIS THROUGH THE IMPLEMENTATION OF QUALITY IMPROVEMENT PROGRAM: A SIX-YEAR HOSPITAL-BASED STUDY

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INTRODUCTIONÂ Â Â Â

According to the infection sites, microorganisms, and aged group, the mortality rate of bacteremia and sepsis was around 30%-50% based on population study in the worldwide. The mortality rate for patients with severe sepsis is high, exceeding 50% in most reported series. Sepsis bundle care (SBC) was administrated for septic patients to reduce mortality since 2001. The implementation of quality improvement program (QIP) through a warning system of sepsis appearing in the first page of the physician’s medical computer and a message of sepsis sending to the physician's mobile phone to alert the activation of SBC was rarely discussed.

OBJECTIVESÂ Â Â Â

The aim of this study is to investigate the clinical outcome of septic patients who had received SBC through the implementation of QIP in the emergency department (ED).

METHODSÂ Â Â Â

We conducted a hospital-based retrospective study of septic patients who had received SBC in the ED. Data were collected from the electronic clinical database of Taichung Veterans General Hospital between May 2014 and April 2020. Sepsis was confirmed by clinical presentation and laboratory investigations. Demographics and clinical characteristics were collected for analysis. We divided enrolled patients into three groups according to the stages of QIP.

RESULTSÂ Â Â Â

Five hundred and seventy five patients was diagnosed sepsis by clinical presentation and laboratory investigations. Data of fourteen patients was incomplete. Finally, five hundred and sixty one septic patients were enrolled, including group 1 (103 patients between May 2014 and April 2017), group 2 (244 patients between May 2017 and April 2019), and group 3 (214 patients between May 2019 and April 2020). The average times between patient registration (PR) and activation of SBC were 238.10±252.38, 208.46±226.63, and 193.68±266.02 minutes (p=0.021). The average times between PR and request of 2nd blood culture were 117.91±182.09, 80.01±132.69, and 82.27±175.78 minutes (p=0.350). The average times between PR and request of lactate were 59.50±144.32, 51.63±124.21, and 57.45±163.07 minutes (p=0.165). The average

times between PR and administration of antibiotics were 128.66±152.58, 116.14±100.68, and 111.42±169.12 minutes (p=0.015).

CONCLUSIONÂ Â Â Â

The times between PR and activation of SBC, and PR and administration of antibiotics were significantly shortened through the implementation of QIP.

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SHARED DECISION MAKING IMPACT ON HOSPICE PALLIATIVE CARE OVER TERMINAL CRITICAL PATIENT

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INTRODUCTIONÂ Â Â Â

The idea of shared decision making(SDM) was first proposed in 1972, with gradually increasing its importance as the upsurging interest in patient centredness and autonomy in health care interactions since the 1970s. It has became the major care model enbodying patient centered care and physician-patient equality interaction. Hospice palliative care among terminal critical illed patient, determined by two separate specialist based on the Hospice Palliative Care Act definition, has long been poorly accepted owing to cultural mis-understanding, especially among Chinese. By retrospective cohort data analysis, we try to unvealed the impact of introducing SDM on hospice palliative care in terminal critical adult ICU patients.

METHODSÂ Â Â Â

Medical record of ICU admitted terminal critical illed patient from Jan. 1st, 2017 to Dec. 31th , 2019 was retrospectively reviewed, and further subdivided into pre-SDM and post-SDM (after Oct. 1st, 2018) intervention period for analysis. Terminal critical illed was defined as ICU admitted patient fit following criteria including advanced malignancy, end-stage motor neuron disease, decompensated heart failure with NYHA Fc IV, oxygenation or ventilator dependent pulmonary and airway disease, liver cirrhosis *Child*-Pugh C with episodes of hepatic encephalopathy, hemodialysis dependent acute or chronic renal failure, extremely elderly associated organic psychosis or central nervous system degeneration, and fulminant critical condition, which post tolerated available treatment without clinically improvement determined by two separate specialist. Decision about withdrawal, discontinuing, or refusing any add-on life supporting management was considered as palliative care. Data including SDM impact on palliative decision associated withdraw or withhold rate, ventilator dependent days, length of ICU stay, length of hospital stay, means of withdraw or withhold, and average medical cost were collected. SPSS was applied for statistically analysis, and a p value less than 0.05 was considered significant difference.

RESULTSÂ Â Â Â

Medical records from total 9198 patients from Jan. 1st, 2017 to Dec. 31th, 2019 were reviewed based on medical record. According to inclusion criteria, 56 patients out of 5209 patients fit terminal critical illed patient during the pre-SDM (before Oct. 1st, 2018) in compared to 153 patients from 3989 patients in post-SDM (after Oct. 1st, 2018). In compared to pre-SDM, post-SDM terminal critical illed patient had less ventilator dependent days(23.9+/-18.5 v.s 21.2+/-16.7, $p < 0.05$), shorter length of ICU stay (24.9+/-19.2 v.s 21.8+/-15.3, $p < 0.05$), and shorter

length of hospital stay (31.2+/-25.9 v.s 27.6+/-23.3, p< 0.05). The most often chosen withdrawal is hospice endotracheal tube extubation, and the most frequent chosen withhold is vasopressor pump prescription. After SDM was introduced, ventilator days, length of ICU stay, and length of hospital stay of terminal critical illed patient was found reduced 2.7days, 3.1days, and 3.6days individually in compared to each other. The average medical cost was also decreased after SDM introduced.

CONCLUSIONÂ Â Â Â

Our retrospective cohort study from a single medical center adult ICU revealed introducing SDM on hospice palliative care over terminal critical illed patient might reduce ventilator days, length of ICU stay, and length of hospital stay. Introducing SDM on hospice palliative care over terminal critical illed patient reduce futile medical treatment and associated excessive medical cost.

FACTORS AT ROSC AFFECTED NEUROLOGIC OUTCOMES IN POST-CARDIAC ARREST PATIENTS WITH TTM IN TIMECARD REGISTRY

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INTRODUCTIONÂ Â Â Â

Target temperature management (TTM) now is a recommended therapy for post-cardiac arrest (PCA) patients. However, the outcomes were still varies among these patients and which factors would affect the outcomes are still controversial. Knowing factors that would affect the outcomes before TTM started would assist the physician to determine whether to start the treatment or not.

TaIwan network of targeted temperature ManagEment for CARDiac arrest (TIMECARD) registry was established and collected data of PCA patients who received TTM therapy in hospitals in Taiwan. We initiated a research with data extracted from TIMECARD registry to seek possible factors at the timing of return of spontaneous circulation (ROSC) that may affect PCA patients' neurologic outcomes.

OBJECTIVESÂ Â Â Â

To determine factors at the timing of ROSC that would correlate with favorable neurologic outcomes of PCA patients who received TTM.

METHODSÂ Â Â Â

Demographic variables, resuscitation variables at the timing of ROSC, and cerebral performance category (CPC) score at hospital discharge were retrieved from TIMECARD registry. Primary outcome was favorable neurologic outcome, defined as CPC scale 1 and 2 at hospital discharge. Logistic regression was applied for the statistical analysis.

RESULTSÂ Â Â Â

A total 540 PCA patients were enrolled for analysis during January 2014 to September 2019 in 9 medical centers in Taiwan from the registry. Among these patients, about 21.67% (117/540) of them possessed favorable neurologic outcomes. The mortality rate was 58.1% (314/540). Patients with diabetes mellitus (OR= 0.57, 95% CI 0.33-0.97), obstructive lung disease (OR 0.33, 95% 0.12 – 0.92), malignancy (OR=0.35, 95% 0.14 – 0.86), initial shockable rhythm (OR= 11.36, 95% CI 5.11 – 25.26), receiving bystander CPR (OR= 2.23, 95% CI 1.24- 3.98), increasing dose of epinephrine (OR= 0.85, 95% CI 0.78 – 0.92), higher diastolic blood pressure at ROSC (OR = 1.07, 95% CI 1.03-1.13) were revealed statistically significant ($p < 0.05$).

CONCLUSIONÂ Â Â Â

Factors at the timing of ROSC, such as some underlying diseases, initial shockable rhythm, receiving bystander CPR, dose of epinephrine, and diastolic blood pressure were associated with the neurologic outcomes of PCA patients who received TTM. Physicians may take consideration of these factors to decide to conduct the TTM or not.

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THE IMPACT OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND INHALED BRONCHODILATORS ON PATIENTS OUCOMTE IN PATIENTS AFTER ACUTE MYOCARDIAL INFARCTION

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INTRODUCTIONÂ Â Â Â

Chronic obstructive pulmonary disease (COPD) in Asia was different from Europe in higher cigarette smoking rate and more severe air pollution. Varies inhaled COPD medications had safety concern in acute myocardial infarction (AMI). The aim of this study was to investigate the effect of COPD in Asia AMI patients and real world safety of COPD medications in AMI patients

METHODSÂ Â Â Â

We conducted a nationwide cohort study extracted data from the Taiwan National Health Insurance Research Database. Patients who hospitalized between 2000 and 2012 with a primary diagnosis of first AMI were included. Among the 186,112 prospective AMI patients, COPD was diagnosed in 13,065 (7.0%) patients. AMI patients without COPD were 1:1 matched by propensity score matching. AMI cohort was further divided to STEMI and NSTEMI cohort. STEMI without COPD was matched by propensity score. Cox proportional hazards regression model was used to estimate adjusted hazard ratios (HR) with 95% confidence intervals (95% CI)

RESULTSÂ Â Â Â

During 12 years follow up, there were 18405 (77.65%) and 16093 (67.89%) deaths in AMI with COPD and without COPD group, respectively. The adjusted hazard ratio (aHR) of mortality in AMI with COPD group was 1.12 (95% CI 1.09 to 1.14). In STEMI with COPD group, aHR was 1.20 (95% CI 1.14 to 1.25). NSTEMI with COPD, aHR was 1.07 (95% CI 1.04 to 1.10). Using short-acting inhaled bronchodilators in AMI patients increased mortality (short acting beta-agonist: aHR 1.2, 95% CI 1.16 to 1.23, short acting muscarinic antagonist: aHR 1.3, 95% CI 1.26 to 1.34). Corticosteroids using also increased 10% mortality (aHR 1.10 , 95% CI 1.07 to 1.14). However, long acting inhaled bronchodilators reduced mortality (long acting beta-agonist: aHR 0.87, 95% CI 0.81 to 0.94, long acting muscarinic antagonist: aHR 0.82, 95% CI 0.69 to 0.96)

CONCLUSIONÂ Â Â Â

In Asia, AMI patient with COPD was associated with higher mortality compared with those without COPD. Guideline recommended AMI medications decreased mortality in patient with or without COPD, but they were underused in Taiwan. Using inhaled short-acting bronchodilators

and corticosteroids in AMI patient reduced survival. On the contrary, long acting inhaled bronchodilators were associated with survival benefit. Appropriate COPD medications and adequate standard AMI medications in AMI patient were equal crucial in improving long term survival

RISK-STANDARDIZED SEPSIS MORTALITY MAP OF THE UNITED STATES

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INTRODUCTIONÂ Â Â Â

Sepsis is the leading cause of in-hospital mortality in the United States (U.S.). Quality improvement initiatives for improving sepsis care depend on accurate estimates of sepsis mortality. While hospital 30-day risk-standardized mortality rates (RSMRs) have been published for patients hospitalized with acute myocardial infarction (AMI), heart failure (HF), and pneumonia, RSMRs for sepsis have not been well-characterized.

OBJECTIVESÂ Â Â Â

To construct a sepsis RSMR map for the US and to illustrate disparities in sepsis care quality across the country.

METHODSÂ Â Â Â

In this cross-sectional analysis, data from the 2010 and 2011 years of the U.S. Nationwide Inpatient Sample (NIS) were extracted. Hospital-level RSMRs were calculated using hierarchical logistic modeling, and were risk-adjusted with predicted mortality derived from (1) the Sepsis Risk Prediction Score (SRS), a logistic regression model, and (2) gradient-boosted decision trees, a supervised machine learning algorithm.

RESULTSÂ Â Â Â

Among 1,739,033 inpatients with sepsis, mortality increased with age, (aOR:4.17 in 80-89-year-olds compared to <40 year-olds). Mortality was slightly higher in women than men (aOR 1.07), and in African-American than White (aOR 1.05). Mortality was higher in patients requiring early and late mechanical ventilation (aOR: 4.63 and 5.72) than patients not requiring ventilation. Mortality was also higher in patients with shock (aOR 2.06) or required hemodialysis (aOR 1.43).

Using the variables above, we constructed a reference model using SRS logistic regression, and an alternative model using boosted tree to predeict mortality for estimating 30-day RSMR of sepsis. In the SRS model, median RSMR was 18.5% (IQR: 17.1-20.6%). In the boosted tree model, median RSMR was 18.4% (IQR 17.0-21.0%). RMSRs higher than 18.5% and 18.4% in

the respective models indicate that the mortality from sepsis is higher than expected after risk adjustment. The boosted tree model demonstrated better calibration and discrimination than the SRS model. (C-statistic 0.87 and 0.78, respectively).

Next, we calculated median 30-day RSMR at the state level using both the SRS model and the boosted tree model. The highest RSMRs were found in Wyoming, North Dakota, and Mississippi, while the lowest RSMRs were found in Arizona, Colorado, and Michigan.

CONCLUSIONÂ Â Â Â

To our knowledge, this is the first description of state-level variation in RSMR of sepsis patients. Most importantly, we constructed a national map of sepsis RSMR, using a dashboard which we are making freely available to any investigator and clinician. We hope that identification of these high-RMSR hotspots will facilitate investment and innovation in sepsis mortality-reduction strategies, diminishing sepsis mortality and healthcare expenditures.

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MACHINE LEARNING APPROACH FOR PREDICTING SEPSIS MORTALITY IN A POPULATION-BASED NATIONAL DATABASE

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INTRODUCTIONÂ Â Â Â

While machine learning algorithms have been used for medical diagnosis and prediction, little is known about their utility in predicting sepsis outcome in the administrative database.

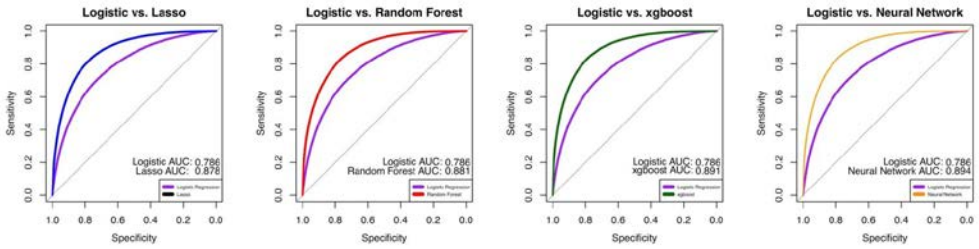
OBJECTIVESÂ Â Â Â

To examine the performance of various machine learning algorithms to predict sepsis mortality in adult patients with sepsis in the administrative database and to compare their performance with the conventional context knowledge-based logistic regression approaches.

METHODSÂ Â Â Â

We conducted a prognostic study of sepsis using data from the US National Inpatient Sample (NIS) from January 1, 2010, through December 31, 2014, Healthcare Cost and Utilization Project (HCUP), Agency for Healthcare Research and Quality. The training dataset was from 2010 to 2013, and the validation dataset is 2014. Sepsis was defined by the ICD-9 coding abstraction strategy proposed by Martin GS et al, which defines sepsis as explicitly coded for severe sepsis or septic shock plus acute organs/systems dysfunction. We only include adult patients and excluded patients with transfer and against medical advice discharge. A nationally representative sample of 963,834 adult patients who met the above criteria was included for analysis where the outcome was in-hospital death. We derived machine learning models in the training dataset and measured the models' prediction performance using C statistics and prospective prediction results. These machine learning models are compared with the reference model (Sepsis Mortality Risk Prediction Score) using the logistic regression model.

RESULTSÂ Â Â Â



Compared to the area under the curve (AUC) of the reference logistic regression (0.786, 95% CI: 0.784 - 0.788), all logistic regression with lasso regularization (0.878, 95% CI: 0.876 - 0.880), random forest (0.881, 95% CI: 0.880 - 0.883), xgboost (0.891, 95% CI: 0.890 - 0.893), and neural network (0.894, 95% CI: 0.892 - 0.895) models showed superior discriminative ability ($p < 0.001$). All four models showed higher sensitivity, specificity, positive predictive value, and negative predictive value compared to the reference logistic regression model ($p < 0.001$). Additionally, we obtained similar results from the Super Learner model (0.891, 95% CI: 0.891 - 0.894). Acute respiratory failure was the most important feature in both the random forest model as well as the xgboost model based on the gini impurity and SHapley Additive exPlanations (SHAP) values, respectively.

CONCLUSIONÂ Â Â Â

Our machine learning models are tools that provide reliable sepsis outcome prediction in the administrative database.

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SOCIAL MEDIA IN DETECTING DISASTER EVENTS- AN EARLY E-WARNING SYSTEM OF EMERGENCY MEDICAL OPERATION CENTERS IN TAIWAN

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INTRODUCTIONÂ Â Â Â

Social media have the benefit on broadcasting messages timelessly and efficiently and play an important role on disaster management. Taiwan Regional Emergency Medical Operation Center (REMOC), supervised by Ministry of Health and Welfare of Taiwan (MOHW), responded nationwide disaster messages in time and to react 24/7 to the emergency accidents since 2005. However, constructing an early warning system to short the time latencies between the outbreak of accidents and the messages received by REMOC is mandatory.

METHODSÂ Â Â Â

We applied an open-source tool LibShortText to collect the messages from the platforms on PTT and FACEBOOK with the disaster relevant keywords such as “typhoon,” “flooding,” and “traffic accidents,” etc. Taiwan REMOCs and on-duty staff used the crawler system to screen and trap disaster-related messages/cases. The frequencies of events as well as the time latency were calculated according to the messages referred from the traditional media, and the messages conveyed by the social media users individually. Precision rate (PR) was applied to infer the correction rate of registered messages referred from the traditional media and those trapped by the social media users

RESULTSÂ Â Â Â

Total 66,588 messages were crawled from our system and of which, 3022 were filtered (average extraction range: 2.5-5.8%). The majority messages trapped by the crawler system were earthquake events (23%), followed by the car accidents (17%), fires (12%) and floods (3%). Among the 702 earthquake relevant news trapped by the crawler system, 125 earthquake events registered by the central weather bureau (CWB), and 124 trapped by social media (124/124, 100%), which were faster than the CWB offical alarming system; 519 car accident messages trapped by the crawler system, 373 events registered by the REMOC and 115 cases trapped by social media (115/150, PR=76.7%); 367 fire messages trapped by the crawler system and 235 of them registered by the REMOC, 169 cases were conveyed by the social media users (169/245, PR=69.0%); 97 flood messages trapped by the crawler system and 27 of them registered by the REMOC, 16 cases were conveyed by the social media users (16/62, PR=25.8 %). The PR of social media in earthquake was 18.6 %.

CONCLUSIONÂ Â Â Â

Our results presented the social media users responded the disaster news faster than the traditional media in the categories of earthquake, fire events, traffic accidents, and floods. In the

aspect of disaster warning function, our study suggests the social media crawler system in earthquake as well as traffic accidents, fires and floods could be helpful to the preparedness of the accidents.

HAVING AN Â€ŒEMPTY BEDÂ€□ AVAILABLE IN ICU IMPROVES MORTALITY: RETROSPECTIVE COHORT STUDY

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INTRODUCTIONÂ Â Â Â

Bed occupancy in UK ICUs is often over 90%. A contributing factor is lack of available beds in hospital wards once patients no longer require ICU. This results in “bed-blocking” in ICU. We have previously demonstrated that “bed blocking” results in delayed admissions (DA) to ICU and increased mortality. Our hospital subsequently introduced a policy of reducing “bed blocking” and ensuring an empty ICU bed was available for emergency admissions.

METHODSÂ Â Â Â

Data was prospectively collected for all patients referred to ICU in our hospital over 12 months prior to policy change (Cohort A), and for 12 months after (Cohort B). Patients were classed as “*DA*” if ICU admission was delayed by more than 4 hours due to “bed-blocking”, or “*Controls*” if admitted to ICU within 4 hours. The Student’s t-test compared APACHE-II scores, ICU and hospital mortality rates, and standardised mortality ratio (SMR). Odds ratio (OR) of death was calculated in the DA group.

RESULTSÂ Â Â Â

In Cohort A, mean APACHE-II scores were similar: controls = 15.7 (*n*=555), DA = 15.8 (*n*=95), P=0.87. ICU mortality was increased in the DA group (21.0% vs 14.1% in controls; P=0.001). SMR was 0.94 in controls and 1.05 in the DA group (P=0.04). OR of death in the DA group was 2.06 (95%CI: 1.22 - 3.47; P=0.007). There were 7 additional deaths in the DA group above that expected.

In Cohort B, mean APACHE-II scores were 15.4 in controls (*n*=651) and 15.6 in the DA group (*n*=15), P=0.97. Mortality was 13.1% in controls and 13.2% in the DA group (P=0.99). SMR was 0.88 in controls, and 0.54 in the DA group. OR of death in the DA group was 1.02 (95%CI: 0.86 – 4.62; P=0.97).

Overall SMR improved from 0.96 (Cohort A) to 0.87 (Cohort B), confirming 13 fewer deaths than would have been expected had our policy not changed.

CONCLUSIONÂ Â Â Â

We have demonstrated that having an empty bed available for emergency ICU admissions results in fewer DA and improved ICU mortality. We recommend other hospitals with high ICU bed occupancy introduce a similar policy.