Acute renal failure and metabolism

000109 - A comparative study of different methods for measuring bladder pressure

N. zhang (1)
(1) Zhongda Hospital, nanjing, China

Introduction

More and more studies focus on intra-abdominal hypertension and abdominal compartment syndrome. There are different ways to measure bladder pressure in clinic, which results in different bladder pressure and affects clinical diagnosis.

Objectives

To investigate the difference of bladder pressure measured by different methods and compare the difference between continuous bladder pressure monitor and transducer, blood transfusion device and infusion device, so as to find out the change of abdominal pressure in time.

Methods

Thirty patients with indwelling catheter in the Department of critical medicine from July 2018 to December 2018 were selected by cluster sampling. Four methods (transducer, transfusion device, transfusion device, continuous bladder pressure monitoring device) were used to measure bladder pressure in the same patient by self-control method, and the differences among the four methods were compared.

Results

There was no significant difference in continuous bladder pressure monitoring, transducer and transfusion device between the two groups ($P > 0.05$). There was significant difference between transducer and transfusion device ($P < 0.05$).

Conclusion

The accuracy of transfusion device in measuring bladder pressure is lower than that of transfusion device, transducer and continuous bladder pressure monitoring equipment.

000024 - Effects of dexmedetomidine on renal microcirculation in ischemic-reperfusion induced acute kidney injury in rats

SJ. Yang (1) ; CN. Fan (1) ; YC. Chen (2) ; TYC. Yeh (1) ; A. Chao (1)
(1) Department of anesthesiology, National Taiwan University Hospital, Taipei, Taiwan; (2) Department of medical education, National Taiwan University Hospital, Taipei, Taiwan

Introduction

Microcirculation plays an important role in ischemic and reperfusion injury (1,2) and dexmedetomidine has been reported to ameliorate kidney ischemic-reperfusion injury (3). This study aims to investigate the effect of dexmedetomidine on renal microcirculation of ischemic-reperfusion induced acute kidney injury in rats.

Methods

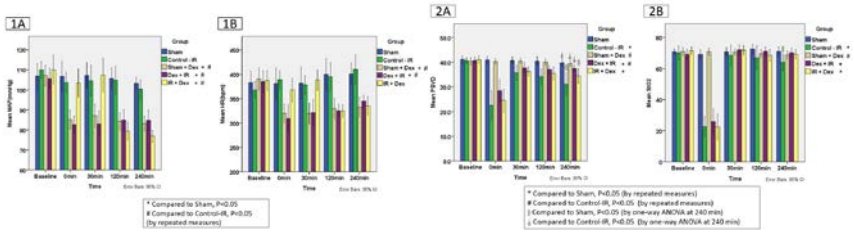
This study was approved by our Institute Animal Care and Use Committee (No. 20170071), and 50 rats were randomly allocated to the following five groups (10 for each group): **Sham** group: sham operation; **Control-IR** group: left kidney ischemia (for 60 minutes); **Sham+Dex** group: sham operation + treatment of dexmedetomidine (3 mcg/kg/h); **Dex+IR** group: pre-ischemia use of dexmedetomidine + left kidney ischemia; **IR+Dex** group: left kidney ischemia + post-ischemia use of dexmedetomidine.

SDF video microscope (Microscan) was used to investigate microcirculation (only perfused small vessel density [PSVD] was reported in this abstract) at different time points (baseline, 0 min, 30 min, 120 min, 240 min). The tissue oxygen saturation (StO_2) was measured by using white light reflectance spectroscopy (moorVMS-OXY). Throughout whole procedure, mean arterial pressure (MAP) as well as heart rate (HR) were continuously monitored and recorded at each time point.

Results

In repeated measurement analysis, MAP were lower in Sham+Dex, Dex+IR, IR+Dex groups than Sham and Control-IR groups (Fig 1A). HR were lower in Sham+Dex and Dex+IR groups than in Sham and Control-IR groups (Fig 1B). PSVD was lower in Control-IR, Dex+IR and IR+Dex groups than that in Sham group (Fig 2A). Moreover, PSVD was higher in Dex+IR group compared with Control-IR. At 240 min, analyzed by ANOVA, PSVD was lower in Control-IR and IR+Dex groups than in Sham group

but higher in Dex+IR group than in Control-IR group. StO_2 was also lower in Control-IR, Dex+IR and IR+Dex groups when compared with Sham group (Fig 2B). At 240 min, analyzed by ANOVA, StO_2 was lower in Control-IR group than in Sham, and StO_2 did not differ signiificantly among Sham, Dex+IR, and IR+Dex groups.



Conclusion

Our results show that pretreatment with dexmedetomidine can improve microcirculatory dysfunction in ischemic-reperfusion induced acute kidney injury in rats.

000032 - Exploring the difference in caloric demand between indirect energy measurement and estimated energy formula for severely ill patients using respirators in a surgical intensive care unit in a medical center in eastern Taiwan

YS. LIN (1) ; GJ. Ho (2) ; LY. Soo (2) ; HM. Lin (1) ; LX. Tong (1) ; SY. Liu (1)
(1) Division of dietetics & nutrition, Hualien Tzu Chi Hospital, Hualien City, Hualien County, Taiwan; (2) Division of acute care and trauma surgery, Hualien Tzu Chi Hospital, Hualien City, Hualien County, Taiwan

Introduction

The nutritional status of critically ill patients is one of the Key factors affecting the time to iberate from the respirator. How to provide appropriate nutritional support to help the patient successfully weaning off the respirator has clinical significance for patients using respirators. There are many ways to assess the caloric needs of critically ill patients in ICUs, including 1) using indirect calorimeters, 2) using calorie demand formulas, and 3) using simple weight formulas. Although the indirect

calorimeter is considered to be most correlate to actual patient's caloric need, it can measure the real time calorie consumption of the patient during the measuring perioid, but most units do not have the resources to do the measurment. The Harris-Benedict equation is the most widely used formula for estimating REE in Taiwan, while Penn State Harris–Benedict is used for estimate of the calorie requirement for truama patients using respirator. The most conspicuous advantage of using the simple weight formula is that it is convenient and straightforward. But as we kenw, there are many factors will affect the energy expenditure, No single formula can consider all of the factors, resulted in affecting the accuarcy of the predictions.

Methods

This study recruit severely ill patients with a respirator for more than five days and a BMI <30 in a surgical intensive care unit in a medical center in the eastern part of Taiwan. The indirect calorimetry (IC) was used to measure the actual caloric needs of the patient. The values are compared with the commonly used calorie estimation formulas such as Harris-Benedict equation and Penn State Harris-Benedict, using 2 sample t-test with equal variances statistical methods.

Results

The results showed that the IC value was significantly higher than the Harris-Benedict equation (kcal: 2514.2 ± 532.9 vs. 1882.5 ± 309.8), and there was a statistical difference (95% CI = 36.6 ~ 1226.7, P = 0.04). IC measurements were also significantly higher than Penn State Harris-Benedict (kcal: 2514.2 ± 532.9 vs. 1803.7 ± 140.6) with statistical differences (95% CI = 132.1 to 1288.9, P = 0.025). The IC measurement was also significantly higher than the calorie estimated by the simple body weight formula (kcal: 2514.2 ± 532.9 vs. 1866 ± 132), and there was a statistical difference (95% CI = 72 to 1224.3, P = 0.034). The calories estimated by Harris-Benedict, Penn State Harris-Benedict, and simple weight formula all underestimate the patient's actual energy expenditure, but there is no significant difference after multiplying the estimated stress factor of 1.3.

Conclusion

The use of indirect calormetry measurements in intensive care units using respirators is a more accurate method for assessing the energy needs of critically ill patients, but if indirect energy measurements is not available, using prediction formula such as Harris-Benedict, Penn State Harris–Benedict or simple weight formula may underestimate patient‘s calorie need, we suggest multiplying prediction formula result with the appropriate stress factor (1.3) may be needed for closer estimation for the energy needs of critically ill patients.

000044 - Vitamin D deficiency is not correlated with mortality among critically ill surgical patient

JM. Lee (1) ; L. Ji-Hyun (2)
(1) Acute care surgery, Korea University Anam Hospital, Seoul, Republic of Korea;
(2) Food service and clinical nutrition team, Ajou university hospital, Suwon-si, Gyeonggi-do, Republic of Korea

Introduction

Critically ill patients in intensive care units (ICUs) are exposed to various risk factors for vitamin D deficiency. Vitamin D deficiency in long-stay patients may result in decreased muscle mass and increased fat tissue, which may impair rehabilitation and recovery.

Objectives

Our study aimed to evaluate the degree of serum vitamin D deficiency in critically ill surgical patients and the correlation with clinical outcomes.

Methods

Clinical data from 186 adult male and female patients hospitalized in surgical ICUs at Ajou University Hospital from April 2015 to September 2016 were retrospectively analyzed.

Results

The mean serum 25-hydroxyvitamin D (25[OH]D) level of all patients was 17.8 ng/mL. A total of 120 patients (64.5%) with serum 25(OH)D levels <20 ng/mL were classified as the deficiency group. Prolonged hospital stay was observed among the deficiency group but with no significant association (p>0.05). Serum 25(OH)D levels were significantly correlated with age but inversely correlated with Sequential Organ Failure Assessment (SOFA) score, triglyceride, and C-reactive protein levels (p<0.05). Within the vitamin D deficiency group, patients without vitamin D replacement showed a considerably higher mortality rate than those with vitamin D replacement.

Conclusion

Vitamin D deficiency was common in surgical ICU patients; however, vitamin D levels were higher in older patients. In conclusion, vitamin D deficiency was inversely correlated with the SOFA severity score but was not correlated with the length of hospital or ICU stay and mortality.

000059 - The Association of Utilizing Nephrotoxic Medications and Renal Replacement Therapies (RRTs) initiation in Acute Settings

R. Bukhari (1) ; A. Alamoudi (1) ; H. Aljedaani (1) ; L. Hassan (1) ; D. Alghamdi (1) ; O. Aljuhani (2)
(1) King abdulaziz university, College of pharmacy, Jeddah, Saudi Arabia; (2) King abdulaziz university, College of pharmacy, clinical pharmacy, Jeddah, Saudi Arabia

Introduction

The incidence of acute kidney injury (AKI) in the intensive care units (ICUs) has increased during the past decade due to increased acuity as well as increased recognition.1,2 The etiology of AKI could be due to dehydration, hypovolemia, decrease in renal blood perfusion, using nephrotoxic agents and many other causes.3 Drug induced kidney diseases (DIKD) account for 19-26% of AKI in hospitalized patients and related to morbidity and increased healthcare cost.4 Most common agents related to AKI occurrence in hospitalized patients include aminoglycoside antibiotics, non-steroidal anti-inflammatory drugs (NSAIDs), contrast agents, and angiotensin converting enzyme inhibitors (ACEIs).5

Majority of the previous studies assessed the relationship between AKI rate and using nephrotoxic drugs, however there is limited literatures about the association between utilizing nephrotoxic medications and renal replacement therapies (RRTs) initiation in acute settings.

Objectives

The primary objective of this study was to evaluate the association between utilizing nephrotoxic drugs and the need for starting RRTs after AKI occurrence in ICU patients. The secondary outcomes were to evaluate the incidence of AKI, effect of age, gender and ICU length of stay on AKI rate and to identify the common nephrotoxic agents that are account for higher RRTs initiation rate.

Methods

This was a retrospective records review study conducted at tertiary academic medical center in Saudi Arabia, the study was approved by the Institutional Review Board (IRB). Adult ICUs patients older than 18 years were included if they were receiving one of the following drugs for more than 24 hours of the admission angiotensin-converting enzyme inhibitors (ACEIs), angiotensin receptors blockers

(ARBs), thiazide diuretics, amphotericin B, aminoglycosides, vancomycin, piperacillin/tazobactam, acyclovir, cisplatin and methotrexate. Exclusion criteria include, patients on RRTs before hospital or ICUs admission, patients on RRTs before nephrotoxic drugs initiation, patients having AKI within 24 hours of ICU admission due to septic shock, hypovolemic shock, hemorrhagic shock or other unspecified types of shock. The primary outcome was the initiation of RRTs after AKI occurrence. Other secondary outcomes of interest include the overall incidence of AKI, effect of age, gender, ICU length of stay on AKI rate and identifying nephrotoxic drugs that are highly linked with RRTs initiation. The primary research outcome and other outcomes were analyzed using applicable chi square test and t-test. A p value of 0.05 is considered an acceptable level of error.

Results

There were 85 patients who were included in the study. Of these, AKI was found in 28.2% (n=24), most of patients who developed AKI were started on RRTs 23.5% (n=20). There was no significance found between age, gender and ICU length of stay and the development of AKI. There was a significant relationship found between mortality rate and AKI (p=0.012), and between mortality rate and RRTs initiation (p=0.00).

Conclusion

The use of certain nephrotoxic medications in acute settings was associated with AKI that may require RRTs initiation and may lead to a

higher mortality rate.

000111 - Association Betwen Daily Fluid Balance With Mean Perfusion Pressure in ICU

B. Lubis (1)
(1) Anestesiology, Perdatin, Medan, Indonesia

Introduction

Mean perfusion pressure (MPP) is the difference between mean arterial pressure (MAP) and central venous pressure (CVP). Patients with low MPP were also found to have high rates of renal failure. Patients with renal failure in the ICU have a high mortality rate as well.

Objectives

The main purpose of this study is to see if there is a connection between mean perfusion pressure and daily fluid balance Intensive Care Unit (ICU).

Methods

A cross-sectional study was conducted from from January to December 2017 in ICU Adam Malik Hospital Medan. Patients with age over 18 years admitted to our ICU were included. The demographic data, Mean Arterial Pressure, Central Venous Pressure, Mean Perfusion Pressure and cumulative fluid balance.

Results

During the study period 76 patients were admitted. 60.5% were male with mean age 48.3±16.5 years old. The overall mortality of 76 patients was 10.5% and there were relationship between MPP <65 mmHg with positive fluid balance (p=0.048).

Conclusion

There is a relationship between MMP <60 mmHg and positive fluid balance. Where positive fluid balance is associated with mortality in ICU

000148 - High doses of Vitamin C in Critically Ill Polytrauma Patients: Implications on Clinical Outcomes

D. Sandesc, (1) ; AF. Rogobete (2) ; OH. Bedreag, (1)
(1) Anaesthesia and intensive care, Victor Babes University of Medicine and Pharmacy, Timișoara, Romania; (2) Clinical Researcher, Victor Babes University of Medicine and Pharmacy, Timișoara, Romania

Introduction

Due to complex pro-oxidative and pro-inflammatory reaction at cellular level, the critically ill polytrauma patient presents an accelerated production of free radicals (FR). The aim of this study was to identify possible correlations between the redox

activity and a series of ordinary biomarkers, as well as to quantify the impact of high-dose vitamin C therapy on the clinical outcome of these patients.

Methods

This prospective randomized observational study was carried out between January 2015 and December 2017 in the Clinic of Anesthesia and Intensive Care, ”Pius Brinzeu” Emergency County Hospital, Timisoara, Romania, with the approval of the local Ethics Committee.

Results

A number of 67 polytrauma patient met the inclusion criteria and were admitted in the study. 35 patients were included in the target group, in a randomized manner, and received the antioxidant treatment, and 32 patients were included in the control group. Upon discharge/death we observed statistically significant differences in the favor of the group receiving antioxidant therapy, for the following aspects: lipid profile($p = 0.0001$), interleukin 6 ($p = 0.0001$), total protein and serum albumin ($p = 0.0006$), C-reactive protein ($p = 0.0014$). Furthermore, starting with day 5 of treatment, we observed a significant decrease in the APACHE II score in the group recieving antioxidant therapy ($p < 0.05$). Last but not least, the incidence of sepsis ($p < 0.05$) and the mortality rates ($p < 0.05$) were significantly lower in the case of patients recieving antioxidant therapy.

Conclusion

High-dose Vitamin C therapy influences the clinical outcome of critically ill patients by minimizing the effects of pro-oxidative activity. Further research is needed in order to characterize the mechanisms of actions, as well as to identify the optimal doses.

000171 - Predictors and outcomes of acute kidney injury and renal replacement therapy in patients requiring venovenous extracorporeal membrane oxygenation

KCH. Lee (1) ; G. Hutson, (1) ; R. Wright, (1) ; G. Vlachopanos, (1) ; J. Kusic, (1) ; E. Ahmadnia, (1) ; M. Ostermann, (2)
(1) Critical Care Unit, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom; (2) Critical care and nephrology, King's College London, Guy's and St. Thomas Hospital, London, United Kingdom

Introduction

Acute kidney injury (AKI) is common in critical illness. Patients requiring extracorporeal membrane oxygenation (ECMO) support have increased susceptibility to AKI due to additional mechanisms including reduced renal oxygen delivery, systemic inflammation and haemolysis related to the extracorporeal circuit[1]. Renal replacement therapy (RRT) is frequently required. Data on the incidence of AKI in ECMO patients and RRT varies. To date, there are no published data from the UK.

Objectives

The primary aim of this study was to identify predictors and outcomes of AKI in patients requiring veno-venous (VV) ECMO. A subgroup analysis was performed to explore factors associated with mortality in those who received RRT.

Methods

We conducted a retrospective analysis of data of all patients admitted and placed on VV-ECMO in a UK regional ECMO referral centre between 2010 and 2016. We identified patients with AKI as defined by the KDIGO consensus criteria. Data on demographics, admission diagnoses, co-morbidities, disease severity, duration of ECMO and ICU stay were extracted. For patients requiring RRT, we also collected laboratory results, fluid balances, and RRT dependence on discharge or death. We compared hospital survivors and non-survivors. Hypothesis testing was performed with chi-square or Fisher-exact test for categorical data, and student's t-test or Mann-Whitney U test for continuous data as appropriate.

Results

Three hundred and twenty-three patients were included in the study, of whom 249 (77%) had AKI and 196 (61%) received RRT. The majority of patients were admitted with non-surgical and non-trauma related diagnoses. Patients with AKI were older (45.6 vs 38.1, $p<0.001$), had higher BMI (27.7 vs 24.9, $p<0.001$) and higher admission SOFA score (9 vs 6.5, $p<0.001$). The proportion of patients with underlying renal disease did not differ significantly between both groups. Duration of ECMO and ICU stay were similar between the groups. Among those who received RRT, there were no significant differences in laboratory markers at initiation of RRT apart from a trend towards a higher cumulative fluid balance (Cum FB) among non-survivors (Table 1). However, on the last day of RRT, non-survivors had a significantly higher cumulative fluid balance and significantly more non-survivors were RRT dependent at ICU discharge compared to survivors.

Table 1: Hospital survivors vs non-survivors in VV-ECMO patients on RRT

	Non-survivors (n=59)	Survivors (n=137)	p-value

Cum FB (RRT Initiation)	1505[572,2754]	814[-22,3500]	0.068
Cum FB (RRT End)	1561[-945,4539]	-989[-7923,143]	<0.001
RRT at discharge/death	46(78%)	52(38%)	<0.001

Conclusion

Age, BMI and ICU admission SOFA scores are potential predictors of AKI in patients on VV-ECMO. The majority of patients who developed AKI were treated with RRT. Hospital non-survivors had a significantly higher cumulative fluid balance at the end of RRT and more patients were still RRT dependent at ICU discharge.

000057 - Evolution in the variables of weaning parameters are associated with re-institution of ventilatory support at the general wards after successful protocoled weaning in tracheostomized patients with prolonged mechanical ventilation

SJ. Lin (1) ; CL. Wu (1) ; YW. Kuo (1) ; SH. Yang (2) ; JS. Jerng (3) ; SC. Ku (4) ; HD. Wu (1)
(1) Department of integrated diagnostics & therapeutics, National Taiwan University Hospital, No. 7, Zhongshan South Road, Taipei, Taiwan; (2) Department of nursing, National Taiwan University Hospital, No. 7, Zhongshan South Road, Taipei, Taiwan; (3) Center for quality management, National Taiwan University Hospital, No. 7, Zhongshan South Road, Taipei, Taiwan; (4) Department of internal medicine, National Taiwan University Hospital, No. 7, Zhongshan South Road, Taipei, Taiwan

Introduction

Protocoled weaning process provides the efficiency advantages for tracheostomized patients receiving mechanical ventilation (MV). However, as the care setting usually changes after the patients are successfully weaned based on the operational definition of 5 days of unassisted breathing, recurrent respiratory failure requiring MV

support is common, whereas the clinically and physiologically associating factors are uncertain.

Objectives

To investigate the factors associated with re-institution of mechanical ventilation in patients who were successfully weaned from the ventilator by the protocled weaning care setting.

Methods

In this retrospective analysis, we included tracheostomized patients with prolonged MV who were discharged from the Respiratory Care Center (RCC), a dedicated weaning unit of a university-affiliated medical center, after successful weaning from the ventilator. Their clinical data, physiological measurements and weaning milestones at the RCC, as well as the events and outcomes related to the use of mechanical ventilation at the general ward, were collected, analyzed and compared between those with and without re-institution of MV, defined as re-connection to ventilator before hospital discharge, at the general wards. We excluded those who re-instituted MV due to surgery or other elective interventions at the general wards.

Results

During the study period from January 2016 to December 2018, 489 (60.1%) of the 814 RCC patients were successfully weaned and transferred to the general wards, of whom 362 (74.0%) were not reconnected to MV till hospital discharge (Group A), 104 (21.3%) re-instituted MV at the general ward (Group B), and 23 (4.7%) died at discharge without reconnected to MV (Group C). The median MV duration in Group A after reinstitution of MV was 7.5 days [range, 0-136 days]; at hospital discharge, 29 (27.9%) of them were eventually MV free, while 54 (51.9%) remained MV dependent, and 21 (20.2%) died. Patients in Groups A and B were similar in age, sex, and all of the weaning parameters on admission, but Group A had a shorter duration of MV (8.9 vs. 11.0 days, p=0.024) and length of stay (14.4 vs. 16.6 days, p=0.014) at the RCC than Group B. Group A also had more significant improvement of spontaneous tidal volume (+21.2 mL vs. -10.6 mL, p=0.028) and Rapid Shallow Breathing Index (-17.0 vs. +1.0, p=0.003) than Group B. Multivariate logistic regression analysis showed that improvement of Rapid Shallow Breathing Index of greater than 20 was associated with a chance of re-institution of MV and discharged alive from the general ward (OR=0.529, 95%CI=0.288-0.971, p=0.040).

Conclusion

Our study shows a substantial probability of re-institution of MV at the general ward despite successful protocoled weaning at the weaning unit, with poor weaning outcomes at the wards. The change of measured Rapid Shallow Breathing Index from RCC admission to discharge is associated with the risk of re-institution of MV at the general wards for patients who are transferred from the RCC after they were successfully weaned based on the protocoled weaning process. Clinicians should

judiciously evaluate the patients during the last five days of continuous unassisted breathing trials especially respiratory physiologic parameters.

000058 - Hepatocyte growth factor protects against oxidative stress and mitochondria-dependent apoptosis via mTOR/STAT-3 signaling in lipopolysaccharide-induced endothelial barrier dysfunction

SS. Meng (1) ; FM. Guo (1) ; XW. Zhang (1) ; M. Xue (1) ; HB. Qiu (1) ; Y. Yang (1)
(1) Department of critical care medicine, zhongda hospital, school of medicine, Southeast University, Nanjing, Jiangsu, China

Introduction

Pulmonary microvascular endothelial cells(PMVECs) were incomplex and endothelial barrier was destroyed in the pathogenesis progress of acute lung injury(ALI)/acute respiratory distress syndrome(ARDS). Our previous studies have demonstrated that hepatocyte growth factor (HGF) could decrease endothelial apoptosis[1,2]. Nevertheless, the mechanism by which HGF-suppressed oxidative stress contributes to endothelial mitochondria-dependent apoptosis is poorly understood.

Methods

We introduced lipopolysaccharide(LPS)-induced PMVECs with HGF treatment. To investigate the effects of mTOR/STAT-3 pathway in endothelial oxidative stress and mitochondria-dependent apoptosis, mammalian TOR (mTOR) inhibitor rapamycin and signal transducer and activator of transcription 3 (STAT-3) inhibitor S3I-201 were respectively used to inhibit mTOR/STAT-3 signaling. Moreover, lentivirus vector-mediated HGF, mTORC1(raptor) and mTORC2(rictor) gene knockdown modification were introduced to evaluate mTORC1 and mTORC2 pathway. Calcium measurement, ROS production, mitochondrial membrane potential and protein complex I expression, cell proliferation, apoptosis and endothelial junction protein were detected to evaluate HGF effects.

Results

Our study demonstrated that HGF protected endothelium via the suppression of ROS production and intracellular calcium uptake, which leading to increased mitochondrial

membrane potential (JC-1 and mitochondria tracker green detection)and specific proteins(complex I), decreased endothelial apoptosis specific protein(Caspase-3), raised anti-apoptosis mRNA level(Bcl-2 and Bcl-xL), and increased endothelial junction proteins (VE-cadherin and occludin). Reversely, mTOR inhibitor rapamycin and STAT-3 inhibitor S3I-201 could raise oxidative stress and mitochondria-dependent apoptosis even with HGF treatment in LPS-induced endothelial cells. Similarly, mTORC1 as well as mTORC2, have the same protective effects in mitochondria damage and apoptosis.

Conclusion

In all, these reveal that mTOR/STAT-3 signaling mediate the HGF suppression effects to oxidative level, mitochondria-dependent apoptosis and endothelial junction protein in LPS-stimulated PMVECs, which contributing to the endothelial survival and barrier integrity.

000073 - Medication utilization evaluation of intravenous fosfomycin at a medical center in Taiwan

YH. Wu (1) ; TT. Wu (1) ; LC. Wang (2) ; YW. Cheng (2) ; LN. Kuo (1)
(1) Department of pharmacy, WanFang Hospital, Taipei, Taiwan; (2) College of pharmacy, Taipei Medical University, Taipei, Taiwan

Introduction

Currently, there is only oral formulation of fosfomycin available in the U.S. and the only indication approved by Food and Drug Administration (FDA) is *Escherichia coli* and *Enterococcus faecalis* -associated UTI. In contrast, parenteral formulation of fosfomycin is available in Taiwan, and a variety of indications have been approved by Taiwan FDA (TFDA), including sepsis, respiratory infection, peritonitis, and urinary tract infection. The purpose of this medication utilization evaluation (MUE) is to investigate whether the use of intravenous (IV) fosfomycin at WanFang Hospital is aligning with the TFDA-approved indications.

Methods

Medical records of adult patients receiving IV fosfomycin for more than 7 days between January 2018 and August 2018 were reviewed. Outcomes include treatment success, clinical success, microbiological success, and safety. Concurrent antibiotic therapies were also recorded.

Results

A total of 61 patients were evaluated in this study. The median duration of IV fosfomycin therapy was 11 days. Ninety-eight percent of the regimen was combination therapy. Thirty-five percent of fosfomycin therapy was used in the off-label indications, including soft tissue infection, meningitis and endocarditis. Treatment success rate was 54.1%, including fosfomycin monotherapy and combination therapy (table 1). Incidences of renal dysfunction, liver dysfunction, and hypernatremia after receiving fosfomycin were 14.8%, 3.2%, and 16.4%, respectively.

Table 1. Outsomces

	Clinical outcome	Microbial outcome	Treatment outcome
Success	35(57.4%)	24(39.3%)	33(54.1%)
Failure	26(42.6%)	29(47.5%)	28(45.9%)
N/A	N/A	8(13.1%)	N/A

Conclusion

Our results demonstrated IV fosfomycin combination therapy at WFH was utilized in off-label indications. It also showed renal impairment and hypernatremia were more frequently observed in our study, comparing to previous studies.

000091 - Imipenem volume of distribution in critically ill patients with sepsis/septic shock

J. Yang (1) ; Q. Sun (2) ; S. Liu (2) ; C. Pan (2) ; Y. Yang (2) ; Y. Huang (2)
(1) Zhongda Hospital, Southeast University, Nanjing Shi, China; (2) Icu, Southeast University Zhongda Hospital, Nanjing, Jiangsu, China

Introduction

Severe bacterial infection remain a major challenge in intensive care units because of their high morbility and mortality. Appropriate antimicrobial therapy reduces the mortality of critically patients obviously. However, the impact of critical illness and therapy on pharmacokinetics (PK) of antibiotics variably changes such as capillary leakage, organ dysfunction or altered fluid balance and hypoalbuminemia.

Objectives

The aim of this study was to explore the factors influence on the apparent volume of distribution (Vd) of imipenem in sepsis/septic shock patients.

Methods

A prospective observational single-centre study was performed with sepsis/septic shock patients treated with 1000mg dosing of imipenem infused intravenously for 3 hours 8-hourly. Serial blood samples for determination of imipenem concentrations were taken predose, end of infusion, at 1, 2, 3 and 5 hours after drug infusion ended on study day 1, day 3 and day 7. Imipenem serum concentrations were measured by High performance liquid chromatography (HPLC). The PK parameters were calculated according to non-compartment model.

Results

A total of 25 adult patients were enrolled in the study. 15 cases in sepsis group and 10 cases in septic shock group. Imipenem Vd (26.5±7.1L) on day 1 in the sepsis group was significantly lower than that (40.7±11.0L, p=0.001) in the septic shock group. There was significant linear correlations between imipenem Vd and serum albumin levels (r= -0.517, p=0.008) and also an obvious correlation between imipenem Vd and APACHE II score(r=0.606, p=0.001) on day 1. By multiple linear regression, serum albumin levels and APACHE II score on day 1 were identified as factors altering imipenem Vd (p<0.05).

Conclusion

APACHE II score and serum albumin concentrations were factors influence imipenem Vd in sepsis/septic shock patients.

000087 - Pain Management in Sickle Cell Diseases: physicians’ knowledge, attitude and barriers, A cross sectional study

O. Aljuhani (1) ; L. Hassan (1) ; R. Mohammed (1)
(1) King abdulaziz university, College of pharmacy, Jeddah, Saudi Arabia

Introduction

Sickle cell disease (SCD) is one of common genetic diseases in Saudi Arabia with the highest prevalence is in the Eastern province1,2,3. The painful acute vaso-

occlusive event is the hallmark of SCD and according to the American Pain Society (APS) these episodes required urgent and effective medical management 4. According to published studies, acute pain management is the top cause for emergency department (ED) visits and frequent hospitalizations and the major focus for long term home management for SCD patients 5. APS guidelines recommend early and effective medical treatment to prevent comorbid conditions, inadequate treatment and developing of chronic pain syndrome 4

Opioids consider the mainstay agents in treating acute moderate to severe SCD pain episodes, however there is ongoing biases against effective utilization of these agents that lead to poor health outcomes.

Objectives

The primary objective of this study was to describe the physician's knowledge about the opioids use and their potential side effects in pain management in SCD. The secondary outcomes measures were to investigate physicians'' attitude towards using opioids in pain management in SCD and identify the common barriers to utilize opioids in SCD pain.

Methods

This was a cross sectional survey-based study that was conducted in different hospitals in Saudi Arabia. The survey was distributed to healthcare providers who are directly involved in the management of patient with sickle cell diseases. This includes consultants, specialists, residents and interns from all services including but not limited to medical, surgical, emergency, intensive care, pediatrics and pain managements services.The survey was validated by pilot testing it on a small subsection of population and by a second review from an expert.Descriptive statistical analysis was used to analyze the preliminary results for primary and secondary outcomes.

Results

The following are preliminary results as the study is still in progress. The survey has been completed by 22 practitioners, 95.5% (n=21) have experience in managing SCD patients. Majority of practitioners 54.5% (n=12) don't have the knowledge that the vaso-occlusive pain is the most common encountered pain type in SCD patients. 27.3 % (n=6) of providers believe that non-opioids analgesics can be as effective as opioids in managing SCD pain. More than 50% (n=14) don't believe that the opioids seeking behavior is the common reasons for frequent emergency department visits by SCD patients. Some providers 27.3% (n=6) don't agree that institutional restrictions would prevent them from prescribing opioids and up to 36.4% (n=8) don't agree that prescribing non-opioids analgesic during sever SCD pain attacks would prevent opioids addiction. 50% (n=11) of participants report fear of being accountable as the main factor that prevent them from prescribing opioids to SCD patients during pain attacks.

Conclusion

The study is still ongoing, and conclusion will be available upon study completion.

000173 - Clinical outcomes of an anesthesia program for enhanced recovery after surgery in recipients undergoing liver transplantation: A single-Center Cohort Study

CH. Lu (1)
(1) Tri-Service General Hospital, Taipei, Taiwan

Introduction

Enhanced recovery after surgery (ERAS) protocols accelerate patient recovery and shorten hospital stay by optimization of perioperative care. However, data on the experience and outcomes of these protocols in liver transplantation are still limited.

Objectives

The present study was aimed to evaluate possible improvements in the patient outcome after the implementation of an ERAS protocol in patients undergoing liver transplantation.

Methods

The implementation of an anesthesia protocol for ERAS was studied in recipients who underwent liver transplantation. Preoperative characteristics, intraoperative management, postoperative complications, and postoperative recovery outcomes, including extubation time, time to normal international normalized ratio (INR) of prothrombin time (PT), alanine aminotransferase (ALT) concentration at 24 hours after transplantation, acute kidney injury, intensive care unit (ICU) stay, days in hospital, the Sequential Organ Failure Assessment (SOFA) scores in the ICU, and 3-year survival rate were retrieved from the hospital database and analyzed.

Results

There were significant less in intraoperative fluid administration, blood loss, and blood transfusion volume in ERAS group. The ICU stay (66.1 ± 42.3 vs. 80.8 ± 48.2 hours, P = 0.045) and hospital stay (18.2 ± 8.4 vs. 22.8 ± 13.4 days, P = 0.012) were also significantly less in ERAS group. The PaO2 divide FiO2 was significantly higher and fewer patients developing acute lung injury (ALI, PaO2/FiO2 < 300, 41.6% vs. 60.8%; p = 0.020) in ERAS group. Furthermore, fewer patients developing acute kidney injury (AKI, 15.6% vs. 31.6%; p = 0.018) by using ERAS protocol. There were no differences in the total SOFA scores and 3-year survival rate between the two groups.

Conclusion

ERAS implementation of anesthesia practice for liver transplantation at our hospital seems to be associated with the lower volumes in total fluid administration and blood loss, less perioperative blood products transfusion with fewer development of ALI and AKI, and less ICU and hospital stay.

000188 - Anti-cytotoxic effect of vitamin C on melamine induced cytotoxicity to human cells

HC. Liu, (1) ; YT. Hung, (2) ; CW. Wei, (3) ; GT. Yiang (4)
(1) Graduate institute of life sciences, National Defense Medical Center, Taipei, Taiwan; (2) Graduate institute of biomedical sciences, China Medical University, Taichung, Taiwan; (3) Departments of nursing and biotechnology, Hungkuang University, Taichung, Taiwan; (4) Department of emergency medicine, Taipei Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, New Taipei, Taiwan

Introduction

Melamine has been used as a basic material for household utensils and added in animals' fodder. There were many reports showed that fodder containing melamine caused kidney-related disease on pets and that milk containing melamine can induce kidney-related disease and death on babies. Therefore toxicity of melamine is an important issue.

Objectives

However, the safe concentration for melamine intake is estimated by animal experiments. There are no reference data about human cells. In order to establish a good reference database for melamine intake, we designed this study. In addition, antioxidant (Vitamin C) is studied to rescue melamine-induced cell damage in this study.

Methods

We use 4 types of human cells (HS80, HEK293, HL60, 293T cells) for testing cytotoxicity of melamine at different concentrations (0, 2.5,10, 15, 25 ppm) for 1-4 days. We examined the cell viability of melamine treated human cells by XTT assay. We also tested free radicals, and SOD, catalase activities. We also use Vitamin C (0uM, 5uM, 25uM) to rescue melamine-induced cell damage in this study.

Results

Our results show that melamine can induce different level rise of free radicals and cell growth inhibition on tumor and non-tumor cells by cell-dependent manner. Our data also shows that free radical is one of the important factors to induce cell damage by melamine. Melamine induces cell death through an apoptotic pathway. Our experiments indicate that Vitamin C can inhibit melamine-induced cytotoxicity.

Conclusion

Overall this thesis is the first one to study melamine-induced damage and provides useful references for cytotoxicity on human cells by treating melamine with or without Vitamin C.