

Trauma and neurointensive care

000028 - Pretreated fucoidan confers neuroprotection against transient global cerebral ischemic injury in the gerbil hippocampal CA1 area via reducing of glial cell activation and oxidative stress

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Introduction

Fucoidan is a sulfated polysaccharide derived from brown algae and possesses various beneficial activities, such as anti-inflammatory and antioxidant properties. Previous studies have shown that fucoidan displays protective effect against ischemia-reperfusion injury in some organs. However, few studies have been reported regarding the protective effect of fucoidan against cerebral ischemic injury and its related mechanisms.

Methods

Therefore, in this study, we examined the neuroprotective effect of fucoidan against cerebral ischemic injury, as well as underlying mechanisms using a gerbil model of transient global cerebral ischemia (tGCI) which shows loss of pyramidal neurons in the hippocampal cornu ammonis 1 (CA1) area. Fucoidan (25 and 50 mg/kg) was intraperitoneally administered once daily for 3 days before tGCI.

Results

Pretreatment with 50 mg/kg of fucoidan, not 25 mg/kg fucoidan, attenuated tGCI-induced hyperactivity and protected CA1 pyramidal neurons from ischemic injury following tGCI. In addition, pretreatment with 50 mg/kg of fucoidan inhibited activations of resident astrocytes and microglia in the ischemic CA1 area. Furthermore, pretreatment with 50 mg/kg of fucoidan significantly reduced the increased 4-hydroxy-2-noneal and superoxide anion radical production in the ischemic CA1 area after tGCI and significantly increased expressions of superoxide

dismutase 1 (SOD1) and SOD2 in the CA1 pyramidal neurons compared with the vehicle-treated-group. Additionally, we found that treatment with diethyldithiocarbamate (an inhibitor of SODs) to the fucoidan-treated-group notably abolished the fucoidan-mediated neuroprotection in the ischemic CA1 area following tGCI.

Conclusion

In brief, these results indicate that fucoidan can effectively protect neurons from tGCI-induced ischemic injury through attenuation of activated resident glial cells and reduction of oxidative stress following increasing SODs. Thus, we strongly suggest that fucoidan can be used as a useful preventive agent in cerebral ischemia.

000029 - mTOR mediates neuronal death following transient global cerebral ischemia in the striatum of chronic high-fat diet-induced obese gerbils

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Introduction

Recent studies have shown that obesity and its related metabolic dysfunction exacerbates outcomes of ischemic brain injuries in some brain areas, such as the hippocampus and cerebral cortex when subjected to transient global cerebral ischemia (tGCI). However, the impact of obesity in the striatum after tGCI has not yet been addressed. The objective of this study was to investigate effects of obesity on tGCI-induced neuronal damage and inflammation in the striatum and to examine the role of mTOR which is involved in the pathogenesis of metabolic and neurological diseases.

Methods

Gerbils were fed with a normal diet (ND) or high-fat diet (HFD) for 12 weeks and then subjected to 5 min of tGCI. HFD-fed gerbils showed significant increase in body

weight, blood glucose level, serum triglycerides, total cholesterol and low-density lipoprotein cholesterol without affecting food intake.

Results

In HFD-fed gerbils, neuronal loss occurred in the dorsolateral striatum 2 days after tGCI and increased neuronal loss was observed 5 days after tGCI; however, no neuronal loss was observed in ND-fed gerbils after tGCI, as assessed by neuronal nuclear antigen immunohistochemistry and Fluoro-Jade B histofluorescence staining. The HFD-fed gerbils also showed severe activated microglia and further increased immunoreactivities and protein levels of tumor necrosis factor-alpha, interleukin-1beta, mammalian target of rapamycin (mTOR) and phosphorylated-mTOR in the striatum during pre- and post-ischemic conditions compared with the ND-fed gerbils. In addition, we found that treatment with rapamycin, a mTOR inhibitor, in the HFD-fed gerbils significantly attenuated HFD-induced striatal neuronal death without changing physiological parameters.

Conclusion

These findings reveal that chronic HFD-induced obesity results in severe neuroinflammation and significant increase of mTOR activation, which could contribute to neuronal death in the striatum following tGCI. Especially, abnormal mTOR activation might play a key role in mediating the obesity-induced severe ischemic brain damage.

000030 - Melatonin protects autophagy-like cell death cerebellar Purkinje cells following asphyxial cardiac arrest through attenuation of oxidative stress via MT2 receptor

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Introduction

Although multiple reports using animal models have confirmed that melatonin appears to promote neuroprotective effects following ischemia/reperfusion-induced

brain injury, the relationship between its protective effects and the activation of autophagy in cerebellar Purkinje cells following asphyxial cardiac arrest and cardiopulmonary resuscitation (CA/CPR) remains unclear.

Methods

Rats used in this study were randomly assigned to 6 groups as follows; vehicle-treated sham-operated group, vehicle-treated asphyxial CA/CPR-operated group, melatonin-treated sham-operated group, melatonin-treated asphyxial CA/CPR-operated group, melatonin plus (+) 4P-PDOT (a MT2 melatonin receptor antagonist)-treated sham-operated group and melatonin+4P-PDOT-treated asphyxial CA/CPR-operated group.

Results

Our results demonstrate that melatonin (20 mg/kg, ip, 1 time before CA and 4 times after CA) significantly improved the survival rates and neurological deficits compared with the vehicle-treated asphyxial CA/CPR rats (survival rates $\geq 40\%$ vs 10%). We also demonstrate that melatonin exhibited protective effect against asphyxial CA/CPR-induced Purkinje cell death. The protective effect of melatonin in the Purkinje cell death following asphyxial CA/CPR paralleled a dramatic reduction in superoxide anion radical ($O_2^{\cdot-}$), intense enhancements of CuZn superoxide dismutase (SOD1) and MnSOD (SOD2) expressions, as well as a remarkable attenuation of autophagic activation (LC3 and Beclin-1), which is MT2 melatonin receptor-associated. Furthermore, the protective effect of melatonin was notably reversed by treatment with 4P-PDOT.

Conclusion

In brief, this study shows that melatonin conferred neuroprotection against asphyxial CA/CPR-induced cerebellar Purkinje cell death by inhibiting autophagic activation by reducing expressions of reactive oxygen species, while increasing expressions of antioxidative enzymes, and suggests that MT2 is involved in the neuroprotective effect of melatonin in cerebellar Purkinje cell death induced by asphyxial CA/CPR.

000036 - Gender Impact and Elderly Donors on Cumulative Survival Rates of Liver Graft Recipients over 20 Years of Experience in Santiago de Compostela (Spain)

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Introduction

809 Liver Transplantation (LT) were performed between 1994-2014 in our hospital. 4,5% of total LT in Spain. Review of the Impact of Donor's Age on Survival of Graft and Recipient in 20 years of experience in our center.

Methods

Retrospective and descriptive Study of our Data (CHUS) and the Spanish LT National Registration (RETH).

Results

Cumulative Survival at 20 years in per serie: 47%, higher in comparison with Global Data provided by RETH (37% Kaplan-Meier curve $p < 0,01$) And in

last 5 years (2008-2013): 77% vs 70% $p < 0,05$.

The Median Age of Brain Death Donor: 53,5 years old increasing from the beginning of program from median 25 years old to 86 years old.

Impact of Survival Rate of Graft based in Elder Age and Gender of Donor (>60 years old): 55% Male Donors vs 38% Female Donors ($p < 0,07$).

In VHC Group, Impact on Survival Rate in 60-69 years old Group: 32% vs 30% in >70 years old Group ($p < 0,05$).

Conclusion

- Elderly Donors, as a surrogate markers, affects Survival rates of Recipients, but it is necessary to adjust other co-variables of Donor to correctly assess this finding.
- Donors' Age affects negatively in Survival Rates of HVC Receptors, something that will undoubtedly change in future studies regards introduction of Antiretroviral Therapy to treat it.

000041 - Challenges of Mass Casualty Incidents to Regional Trauma Center: 2018 Yilan Train derailment

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Introduction

The worldwide use of rail transport has increased in the past century. Not only advanced countries have built high-velocity railways, but the speed of traditional railways has also continued to escalate. As a result, the number of casualties caused by train derailment has also increased significantly; notwithstanding, there are relatively few studies on train crashes and the impacts of local medical care system.

Objectives

The aim of this study was to identify critical challenges regarding the regional medical emergency operation system of the 2018 Puyuma express train crash that occurred at Xinma station, outside Su'ao Township, Yilan County, Taiwan.

Methods

Hospital records of all the injured who were admitted to the three hospitals in the region were reviewed and compiled by descriptive statistics. The instant fatalities (n = 18) were collected on site. Analysis of the patient distribution of 157 casualties of the crash by collecting data on medical treatment capacity, number of patients received per hospital, triage classification, secondary transfers, distance from the crash site, and the critical mortality rate.

Results

There were three receiving hospitals (distance from crash: 3.5–10.4 km) within 15 km of the crash and received 157 casualties (including secondary transfer). 9.6 percent (n = 20) suffered fatal injuries, of which 90% (n = 18) died at the crash site and 10% (n = 2) at the hospital. Thirty-one percent (n = 47) of those admitted to hospital suffered multi-trauma (ie, extensive, severe, and/or critical injuries). The head, neck and spine sustained 42.5% (n = 20) of the injuries followed by the trunk (chest, abdomen, and pelvis; n = 16; 34%). For all casualties with "Resuscitation" or "Emergency", the level I trauma center received 55.8%, the level II trauma center received 28.6%, and the level III trauma center received 25.6%. Only 10 casualties were secondarily transferred, and no casualties died in, or on the way to hospital (critical mortality rate = 0%).

Conclusion

A mass-casualty incident with an extensive amount of fatal, severe, and critical injuries is most probable with railway transportation. Efficient triage and patient diversion, even in areas with relatively insufficient medical resources, can significantly improve the ability to deal with mass casualty incidents and the survival rate of patients.

000048 - Facilitate Weaning Ventilators by Video-Assisted Thoracoscopic Surgery With Rib Fixation in Severe Blunt Thoracic Injury with Acute Respiratory Failure

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Introduction

Severe blunt chest injury sometimes induces acute respiratory failure (ARF) due to severe pain, chest wall deformity, pleural collections and lung contusions. This dangerous complication requires rapid resuscitation to avoid mortality. Ventilator support is efficient in managing ARF, but long term dependence may increase morbidity. This study provides a method to treat both chest wall and pleura lesions completely to shorten the dependence of ventilator.

Methods

This prospective observational study is designed at October 2014 and patients were enrolled from March 2015 to Jun 2018. All patients had multiple bi-cortical ribs fracture with ARF caused from blunt chest trauma. Patients received positive pressure mechanical ventilation within 24 hours after trauma. Video-assisted thoracoscopic surgery (VATS) was applied to all patients. Some patients received ribs fixation during VATS were enrolled as Group 1, and the others received only VATS were belonged to Group 2. Rate of pneumonia and ventilator dependence as primary clinical outcomes and length of stay (LOS) in hospital as secondary outcomes were collected to compare.

Results

Total 61 patients who had ARF were included in this study. The basic demographic characters between two groups are similar without statistical significance. All patients received VATS within 6 days after trauma. Most patients in Group 1 could be weaned ventilator in four days after VATS adding rib fixation (3.19 ± 3.37 days vs. 8.05 ± 8.23 , $P = 0.002$). The rate of pneumonia is higher in Group 2 (38.1% vs. 75.0%, $P = 0.005$). LOS in-hospital is much shorter in Group 1 (17.76 ± 8.38 days vs. 24.13 ± 9.80 , $p = 0.011$).

Conclusion

VATS adding ribs fixation could provide definite treatment in chest wall and pleural lesions. This combination management has efficiency in reducing pneumonia rate then shortened ventilator dependence in severe chest blunt trauma with acute respiratory failure.

000077 - Prognostic value of copeptin in patients with polytrauma

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Introduction

Existing prognostic models for trauma patients are limited. Copeptin is a sensitive surrogate marker for AVP release indicating the individual stress response. The prognostic value of copeptin in trauma patients has not been evaluated.

Objectives

The aim of the current study is twofold. First, we seek to evaluate the prognostic significance of copeptin in patients with trauma. Second, we aim to investigate whether the addition of copeptin to the existing trauma triage score, specifically TRISS (Trauma and Injury Severity Score) and MGAP (Mechanism Glasgow scale and Arterial Pressure) score, could improve their predictive power.

Methods

Trauma patients presented to the emergency department of a level 1 trauma center between 2016 June to 2016 December were prospectively enrolled. Copeptin levels

were measured at admission with the commercial assay (Kryptor, Thermo Fisher Scientific) and trauma triage scores including TRISS and MGAP scores were calculated for each patient. The association of admission copeptin level with mortality or composite outcome of death and ICU admission was tested using receiver operating characteristics curve. Incremental value of copeptin to TRISS or MGAP score was evaluated by logistic regression and reclassification analysis.

Results

One hundred and thirty-one trauma patients were enrolled with a median injury severity score of 9 (Interquartile range 4-26) and 30-day mortality of 16%. After exclusion of patients presenting with out-of-hospital cardiac arrest, copeptin showed a significant correlation with 30-day in-hospital mortality. Median copeptin admission levels were significantly higher in non-survivors as compared with survivors (495 IQR 75-761 pmol/L versus 35.7 IQR 16.5-73.0 pmol/L; $p < 0.0001$). The area under the ROC curve in predicting in hospital mortality was 0.901 for MGAP score, 0.892 for copeptin, and 0.734 for TRISS. Adjusted for TRISS or MGAP in the regression model, copeptin remains significantly associated with the death outcome, indicating an incremental value of copeptin to the two trauma triage scores. The risk prediction improvement was also reflected by a net reclassification improvement of 37% ($p = .006$) for TRISS and 16% ($P < 0.001$) for MGAP score. Copeptin-augmented MGAP score could achieve the best discrimination (AUC 0.96, 95% CI 0.87-1.00) with a sensitivity of 94.4% (95%CI: 72.7%-99.9%) and a specificity of 99.1% (95%CI: 95.0%-100.0%). Copeptin alone could reach a sensitivity of 92.6% (85.3%-97.0%) and a specificity of 92.55% (85.3%-97.0%) to predict death among trauma patients at a cutoff of 125 pmol/L.

Conclusion

Copeptin is a highly accurate biomarker that can be used for rapid risk stratification of polytrauma patients. Combining the information of copeptin and MGAP score will further increase the mortality prediction accuracy. Prospective multicenter studies are needed to validate our findings.

000115 - Intravenous versus oral or enteral nimodipine in patients after aneurysmal subarachnoid hemorrhage

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Introduction

Aneurysmal subarachnoid hemorrhage (aSAH) following a ruptured intracranial aneurysm accounts for approximately 5% of the strokes. Delayed cerebral ischaemia (DCI) occurs in more than 60% of patients, and is associated with worse outcome. Up to 70% of patients with aSAH develop vasospasm and, of these, 30% have clinical symptoms. DCI can occur in the absence of vasospasm and often affects more than one vascular territory. Per 2012 AHA/ASA guidelines, oral nimodipine should be administered to patients with aSAH, to improve neurological outcomes. There is no clear data supporting the effectiveness of intravenous (IV) nimodipine. To date, there were only two RCTs, one comparing serum concentration and the other comparing clinical efficacy, between intravenously and orally/enterally administered nimodipine in patients with aSAH. We performed a analysis of clinical results of IV administration including the rate of vasospasm or delayed ischemic neurologic deficits.

Methods

This retrospective cohort study evaluated adult aSAH patients receiving IV versus oral/enteral nimodipine from July 2017 to June 2018. Effectiveness was monitored angiographically by digital subtraction angiography and by transcranial Doppler, and neurologic examination during treatment course and follow-up. Coma and death were also recorded. Safety outcomes, include elevated liver enzymes, thrombocytopenia, development of phlebitis, and nimodipine associated hypotensive events, were recorded. All calculations were performed using SPSS statistics version 18.0. Fischer's exact test was used for categorical variables, and Wilcoxon's rank-sum test was used for continuous variables.

Results

From July 2017 to June 2018, 18 aSAH patients were admitted to WanFang Hospital. From these patients, 14 patients and 4 patients received IV and oral/enteral nimodipine, respectively. One patient from each group was excluded due to against medical advice and was discharged. The mean duration of IV and oral/enteral nimodipine were 17.7 and 13.7 days, respectively ($p=0.74$).

Two patients in the IV group and 1 patient in the oral/enteral group died during hospitalization (16.7% vs. 33.3%, $p=0.52$). Three patients in the IV group while no patient in the oral/enteral group had coma (23.1% vs. 0%, $p=1$). Evidence of vasospasm was observed in four patients in the IV group. In contrast, none of vasospasm was noted in the oral group ($p=0.53$).

The dosage could be reduced if the patient developed significant hypotension. IV group was not associated with higher rates of hypotension and bradycardia. In the IV group, 2 patients experienced phlebitis and 1 patient experienced elevated AST. No patient experienced thrombocytopenia during nimodipine use.

Conclusion

IV administration of nimodipine was not associated with worse neurological outcomes in aSAH patients at one institution. More studies are needed prior to recommending IV nimodipine therapy in all aSAH patients.

000175 - Diagnosis of Meningitis ,a Comparison of Standard Laboratory test with Commercially available assay(Xcyton): a cross-sectional study

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Introduction

Meningitis is an inflammatory disease of the leptomeninges, the tissues surrounding the brain and spinal cord, and is defined by an abnormal number of white blood cells in the cerebrospinal fluid (CSF).

Approximately 1.2 million cases of bacterial meningitis occur annually worldwide [1]. Meningitis is among the 10 most common infectious causes of death and is responsible for approximately 135,000 deaths throughout the world each year. Neurologic sequelae are common among survivors.

Objectives

Prompt diagnosis and treatment can prevent morbidity and mortality. Diagnosis of meningitis is a challenge, especially to detect the exact causative organism. Molecular based techniques like PCR are more useful. We compared the CSF results of XCyton to standard laboratory method of diagnosis in patients suspected to have neuroinfection

Methods

A cross sectional study of 101 patients admitted to Medical ICU between January 2011 to December 2013 were included this study. Patients with suspected neuroinfection based on the history and clinical examination were subjected to CSF analysis after Computed tomography scan of brain. The results of both (XCyton and Standard laboratory) CSF analysis were compared with each other. They were also compared with clinical and radiological findings of the patients. All statistical tests were done using R Software version 3.2.2.

Results

Among 101 patients who were suspected to have neuroinfection the standard laboratory test was positive in 12 patients compared to 31 patients with XCyton. Xcyton when compared to standard laboratory test had sensitivity and specificity of 75% while the positive predictive value and negative predictive value was 29% and 95% respectively.

When Xcyton was correlated with clinical and radiological features we were able to identify 12 extra cases which would have been missed if only standard laboratory tests were undertaken. About three cases were missed by XCyton and was diagnosed by our standard laboratory test.

Conclusion

Though commercially available test like XCyton are promoted as rapid diagnostic tests with high sensitivity and specificity. In our study sensitivity and specificity was 76% and 71% with PPV of 30% and NPV 95%. XCyton was able to diagnose twelve additional patients compared to standard laboratory test. There was a risk of missing three cases if Xcyton assessment alone was used and there was also high incidence of false positive results with multiple pathogens being detected. Based on our study we conclude that standard laboratory tests may miss many cases of neuroinfection. Also Xcyton assessment alone may not be sufficient in evaluation of patients with suspected neuroinfection.

000004 - Comparison of cerebrospinal fluid and serum neuron specific enolase concentrations in predicting neurologic outcome in cardiac arrest survivors under target temperature management

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Introduction

Serum neuron-specific enolase (NSE) is a widely used biomarker for prognostication of neurological outcome after cardiac arrest survivors.

Objectives

We aimed to compare cerebrospinal fluid and serum NSE values for prediction of neurologic outcome in cardiac arrest survivors under target temperature management (TTM).

Methods

We undertook a single-centre prospective study examining cardiac arrest (CA) patients treated with target temperature management (TTM). NSE levels were assessed in blood and in CSF samples obtained 0, 24, 48, and 72 hours after return of spontaneous circulation (ROSC). The primary outcome was 3-month neurologic outcome.

Results

Of 21 patients enrolled, the good outcome group comprised 11 (52.4%) patients. Median NSE values at 0, 24, 48, and 72 hours significantly differed between serum and CSF ($p = 0.015$, $p = 0.001$, $p = 0.002$, and $p = 0.001$). In addition, CSF NSE values were showed significant different among neurological outcome groups at all time intervals, but serum NSE values were not different between neurological outcome groups at 0 hour after ROSC ($p = 0.075$). Serum NSE at 24 hours had a higher area under the receiver operating characteristic curve (AUC) (0.882; 95% confidence interval (CI), 0.667–0.980) than other time points. CSF NSE values at 0, 24, 48, and 72 hours showed higher AUC (0.891, 0.945, 0.945, and 0.955) than serum NSE at 24 hours.

Conclusion

CSF NSE was more closely associated with poor outcome than serum NSE. Furthermore, CSF NSE values differed between neurologic outcome groups at 0 hours after ROSC.

000022 - Eccentric Target Sign

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Introduction

Toxoplasmosis, a protozoan infection, is one of the most common causes of focal brain lesions in patients with Human Immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) particularly in developing countries. Differentiation is critical as it has therapeutic implications and early institution of therapy is curative in toxoplasmosis.

Methods

A 61 year old known HIV positive male patient presented to emergency with altered sensorium and multiple episodes of GTCS. Baseline labs revealed a CD4 cell count of 54 cells/mm³ with a high HIV viral load, indicating that patient was at high risk for opportunistic infection. His contrast enhanced MRI was suggestive of innumerable incomplete ring enhancing lesions (Fig 1) with eccentric mural nodules described classically as “eccentric target sign” involving bilateral hemispheres. The postcontrast T1 “eccentric target sign” that has three different zones: an innermost eccentric enhancing core, an intermediate hypointense zone, and an outer peripheral hyperintense enhancing rim. It correlates histologically with a central enhancing core of inflamed vessels at the sulci surrounded by concentric zones of necrosis and a wall composed of histiocytes and proliferating blood vessels. This sign has a sensitivity of 25% and specificity of 95% for diagnosis of cerebral toxoplasmosis.

Results

As serological tests are often unhelpful, cranial imaging is relied upon for diagnosis. But this patient was also positive IgG antibody for toxoplasma, started on antimicrobial therapy and was treated successfully.

Conclusion

Current image demonstrates the importance of recognition of the key radiological features of CNS lesions in HIV patients to prevent delay of treatment.

000078 - Usefulness of a quantitative analysis of the cerebrospinal fluid volume proportion in brain computed tomography for predicting neurological prognosis in cardiac arrest survivors

who undergo target temperature management

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Introduction

Brain swelling post-cardiac arrest may affect cerebrospinal fluid volume. We aimed to investigate the prognostic performance of the proportion of cerebrospinal fluid volume (pCSFV) using brain computed tomography (CT) in cardiac arrest survivors.

Methods

This retrospective multicentre study included adult comatose cardiac arrest survivors who underwent brain CT scan prior to target temperature management (TTM) from 2015 to 2016. Grey-to-white matter ratio (GWR) and pCSFV values were calculated. pCSFV analysis was performed using automated quantitative analysis programming. The primary outcome was a 6-month neurological outcome.

Results

Of 251 patients (median age, 57 years), 173 (68.9%) were male, 87 (34.7%) had a shockable rhythm, and 160 (63.7%) had unfavourable neurological outcomes. GWR but not pCSFV was significantly higher in terms of favourable neurological outcomes ($p = 0.015$). pCSFV prognostic performances were similar to GWR, and were poor overall, (0.521; 95% confidence interval [CI], 0.446–0.694 vs. 0.515; 95% CI, 0.441–0.589). After adjusting for covariates, pCSFV but not GWR was independently associated with neurological outcome 6 months following cardiac arrest ($p = 0.049$).

Conclusion

pCSFV was independently associated with neurological outcome 6 months following cardiac arrest, however prognostic performance was not good.

000086 - The efficacy of cerebral perfusion pressure, intracranial pressure, and mean arterial pressure to

predict the neurological prognosis of cardiac arrest survivors who had undergone target temperature management

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Introduction

To our knowledge, studies with very small sample sizes have reported a relationship between direct measured CPP, ICP, and neurological outcome in CA survivors who have undergone TTM.

We hypothesized that ICP, CPP, and MAP measured prior to TTM could be useful tools for predicting the neurological outcome of CA survivors.

Objectives

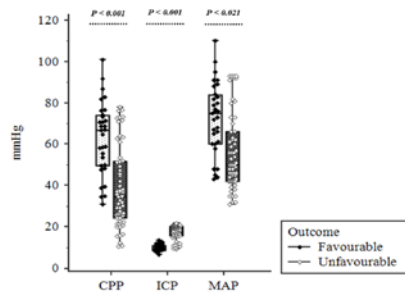
To compare the efficacy of mean arterial pressure (MAP), intracranial pressure (ICP), and cerebral perfusion pressure (CPP) to predict neurological prognosis in cardiac arrest (CA) survivors

Methods

We retrospectively examined CA patients treated with targeted temperature management. ICP was measured using cerebrospinal fluid (CSF) pressure. MAP was measured as radial or femoral artery blood pressure monitoring during CSF pressure measurement. CPP (mmHg) was calculated using MAP and ICP measurements. The primary outcome was the 6-month neurological outcome.

Results

Of 92 enrolled patients, a favourable outcome group comprised 31 (34%) patients. The median and interquartile range of MAP and CPP were significantly higher and ICP was significantly lower in patients with favourable rather than unfavourable neurological outcomes (94.3 mmHg [80.0–105.3] versus 82.0 mmHg [65.3–96.3], $P = 0.021$; 18.8 mmHg [20.0–15.7] versus 9.4 mmHg [10.8–8.7], $P < 0.001$; and 34.4 mmHg [24.4–51.8] versus 66.7 mmHg [49.6–74.4], $P < 0.001$, respectively). ICP showed the highest area under the receiver operating characteristic curve (AUC; 0.953, 95% confidence interval [CI]; 0.888–0.986) for neurological outcome prediction, followed by CPP (AUC; 0.815, 95% CI; 0.721–0.889).



Conclusion

ICP was the highest prognostic performer, followed by CPP, with good prognostic performances.

000110 - Correlation between serum levels of lactate dehydrogenase and neurological outcomes in patients who undergo target temperature management after cardiac arrest

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Introduction

The survival rate for patients with cardiac arrest (CA) has increased due to improved education concerning cardiopulmonary resuscitation, including the use of automated external defibrillators and the development of post-CA therapy, such as target temperature management (TTM). Several biological markers, such as the S-100B protein and neuron-specific enolase, have been demonstrated to be useful, and LDH levels increase abruptly when organs are damaged during hypoxia. Our theory is that Hypoxic ischemic brain injury (HIBI) severe enough to affect the brain will co-occur with extensive tissue damage in one or several organs and therefore, a biochemical marker like total LDH, that is not organ specific, is preferable in this context.

Objectives

The optimal time to measure serum lactate dehydrogenase level (SLL) to predict prognosis in cardiac arrest (CA) survivors has not been elucidated. We aimed to

compare the relationships between time-related SLL and neurological prognosis in CA survivors.

Methods

We conducted a retrospective study examining patients with CA who were treated with target temperature management (TTM). SLL was checked repeatedly at 24-h intervals after return of spontaneous circulation (ROSC). SLL at ROSC and 24-, 48-, and 72-h outcomes were the relationships between each time interval SLL and the neurological outcome 3 months post-CA.

Results

A total of 256 comatose patients with CA were treated with TTM. Seventy-three patients were included, and 31 patients (42%) experienced a good neurological outcome. At 24, 48, and 72 h, there was a significant difference between good and poor outcome groups ($p < 0.001$), except at ROSC ($p = 0.056$). The area under the receiver operating curve (AUC) of at ROSC was 0.631 (95% confidence interval [CI], 0.502–0.761). The AUC at 48 h (0.830; 95% CI, 0.736 – 0.924) was higher than that at 24 and 72 h (0.786; 95% CI, 0.681–0.892 and 0.821; 95% CI, 0.724–0.919).

Conclusion

A higher SLL was strongly associated with and seemed predictive of poor outcomes. Furthermore, at 48 and 72 h, SLL may be a useful predictor of poor neurological outcomes. Prospective studies should be conducted to confirm these results.

000133 - Glycemic control in prevention of infectious in patients with severe polytrauma

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Introduction

Trauma is a leading cause of mortality globally [1]. Severe polytrauma (SPT) is an injury of two or more systems with life-threatening systemic/organ dysfunctions [2]. Mortality in SPT ranges from 23.3% to 85% [3]. Infectious complications (IC) of SPT are frequent cause of mortality at SPT patients [4, 5]. Severe stress reaction in patients with SPT causes prolonged hyperglycemia, and it was considered as an adaptive response [6]. Was found that hyperglycemia causes induction of apoptosis, deterioration of functions of white blood cells [7, 8]. In addition, it's associated with high risk of IC and increases the cohort mortality in patients with SPT [9-10]. Goal of our work was to reduce the incidence of IC and mortality in patients with SPT using glycemic control and intensive insulin therapy of initial hyperglycemia.

Objectives

1. To discover the glycemic profiles of patients with SPT, which determine the risk of IC.
2. To investigate the immunity of SPT patients associated with systemic inflammatory response considering glycemic profiles.
3. To evaluate the incidence of IC in patients with different glycemic profiles.
4. To assess the effectiveness of insulin therapy on mortality in SPT patients.

Methods

Clinical cohort trial included 207 patients. Inclusion criteria were patients aged 18 to 60 years with SPT (ISS > 26). There are III groups: I - 44 patients without initial (during the first 6 hours) hyperglycemia. II - 45 patients with glucose > 100 mg/dl, without insulin therapy. III - 59 patients with glucose > 100 mg/dl, with insulin therapy according to intensive glucose control protocol.

Results

1. Patients with SPT and glucose blood level above 150.0 mg/dl during the first 6 hours had higher mortality. 2. Hyperglycemia without insulin therapy at SPT patients induces the immune depression, its phagocytic activity decreased on 36% ($p=.034$) and CD4/CD8 on 52% ($p=.027$). 3. Insulin therapy of initial hyperglycemia can normalize the phagocytic activity equal to those without hyperglycemia ($p=.081$), and increasing of CD4/CD8 on 12% ($p=.063$).

Conclusion

1. The incidence of IC during the first 14 days of post-traumatic period in survived patients with euglycemic profile was 34.3%, compare to non-survived 88.9%; with hyperglycemic profiles was 78.6% compare to 100.0% respectively.

2. Correction of initial hyperglycemia accompanied by significant reduction in frequency of IC: 22.2% in survived group and 71.4% in non-survived outcome.
3. Glycemic control and insulin therapy reduces mortality in patients with SPT from 37.8% to 23.7%.

000147 - Response Entropy: Guided General Anaesthesia in Critically Ill Polytrauma Patients

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Introduction

The critically ill polytrauma patient is highly unstable and therefore a big challenge for the anaesthesia team. In the present study we wish to evaluate the opioid and vasopressor demand in the critically ill polytrauma patients, together with the incidence of hemodynamic events by using different monitoring means, and through this compare the accuracy of Entropy and Surgical PlethIndex (SPI) with standard monitoring methods (GE Healthcare, Helsinki, Finland).

Methods

This was a prospective observational study that included a number of 72 patients. The patients were assigned to two different groups, namely the Group A (N=35, these patients were monitored using standard methods) and the Group B (N=37, these patients were monitored using Entropy and SPI). For the Group A we ensured the adequate hypnosis and analgesia based on hemodynamic changes as part of the standard monitoring methods. For the Group B we aimed at obtaining an Entropy level between 40 and 60 for adequately modulating general anaesthesia and an SPI level between 20 and 50 for analgesia control. ClinicalTrials.gov identifier NCT03095430.

Results

Patients in the Group B presented with significantly fewer hypotension episodes (N=3) in comparison with the incidence for hypotension in the Group A (N=71) ($p < 0.05$). Furthermore the Fentanyl demand in patients included the Group B was significantly lower ($p < 0.0001$, difference between means 5.000 ± 0.038 , with a 95% confidence interval 4.9250 to 5.0750). In addition the demand for vasopressor

medication was also lower in the Group B ($p < 0.0001$, difference between means 0.960 ± 0.063 , 95% confidence interval 0.8.334 to 1.0866).

Conclusion

Anaesthesia-related complications can be reduced, and the intraoperative status and clinical outcome can both be improved when implementing the use of multimodal monitoring in the case of critically ill polytrauma patients.

000185 - Interaction effects between targeted temperature management and hypertension on survival outcomes after out-of-hospital cardiac arrest: A national observational study from 2009 to 2016

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Introduction

Targeted temperature management (TTM) has been used to improve neurological recovery in comatose patients after out-of-hospital cardiac arrest (OHCA).

Hypertension is represented to a risk of OHCA, but, not well known whether affect neurological prognosis. This study aimed to investigate the effect of the TTM on neurological recovery after OHCA patients with or without hypertension.

Objectives

This study aimed to investigate the effect of the TTM on neurological recovery after OHCA patients with or without hypertension.

Methods

This study was conducted with the use of the national cardiac arrest registry of OHCA patients with presumed cardiac etiology who survived till emergency department (ED) admission between 2009 and 2016. The primary exposure was TTM. The endpoint was cerebral performance category (CPC) 1 and 2 at discharge.

We compared outcomes between the TTM and non-TTM groups using multivariable logistic regression with an interaction term between TTM and hypertension for calculating adjusted odd ratios (AORs) and 95% confidence intervals (CIs) after adjusting for potential confounders.

Results

Among 25,985 patients following OHCA that survived till hospital admission with presumed cardiac etiology, TTM was performed on 12.2%. The TTM group showed better outcomes than the non-TTM group: 28.1% vs. 15.5% for good neurologic recovery ($P < 0.01$). The AOR of TTM for good neurological recovery for all study groups was 1.65 (1.47-1.85). In interaction model, the AOR of TTM for good neurological recovery was 1.87 (1.26-2.76) in patients without hypertension vs. 0.87 (0.75-1.02) in patients with hypertension

Conclusion

Hypertension modified the effect of TTM on neurological outcomes for OHCA patients. TTM is associated with good neurological recovery in patients without hypertension, but not in patients with hypertension.