Critical care; neurotraumatology

**PP3089**

Delayed neurological complications after lightning injuries: results from a case series

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**Introduction:** Lightning injuries are a worldwide cause of disability and death. In Germany alone, every year about 30-70 people are struck by lightning. The lethality of lightning injuries is about 10% and survivors often suffer from acute or delayed complications. While immediate effects of lightning injuries like cardiac arrest, impaired consciousness, and skin burns are frequent complications, less knowledge exists about delayed and long-term symptoms, in particular regarding the peripheral and central nervous system. On this background, our study presents neurological and neuropsychological long-term effects and complications occurring after lightning injuries.

**Methods:** We examined 8 patients (5 male, 3 female) to 20 years at a point of time up to twenty years ago after their lightning strike in a cross-sectional study. Neurological examination, electrodiagnostic testing and a neuropsychological test battery were done.

**Results:** We found a consistent pattern of neurological and psychiatric disorders after lightning strike injuries. Affection of the central and peripheral nervous system and chronic pain syndrom were found frequently. In the long term, sequelae of lightning injuries often have a substantial effect on the quality of life, resulting in severe medical and social health problems.

**Conclusion:** In the long term, survivors of lightning injuries suffer from various neurological, psychiatric and social problems. Early diagnosis, classification and a long-term treatment of neurological symptoms are essential for these patients. Counseling and education can help to minimize negative impact with regard to the social dimension like social isolation or disability.

**Disclosure:** Nothing to disclose

**PP3090**

Respiratory failure in the Neurology Intensive Care Unit (NICU) – difference between central (CNL) and peripheral motor neuron lesion (PMNL)


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**Introduction:** Respiratory failure, a severe complication in NICU, influences disease course, complications occurrence and ultimately leads to death. The aim was to compare mechanical ventilation (MV) duration, complications frequencies and survival rates between NICU patients who had a lesion of either CNL or PMNL.

**Methods:** A one-year, single-center, retrospective observational study in NICU compared all the patients with respiratory failure treated by MV assigned in groups: 1-patients with PMNL and 2- patients with a CNL. We compared age, frequency of co-morbidities, Glasgow Coma Score (GCS) at the hospital and NICU admission, time until MV and MV length, complications frequency, length of NICU stay and survival rates.

**Results:** Group 1 had 17 patients (6 females), and group 2-15 patients (7 females). Group 2 had significantly lower mean GCS at the hospital and NICU admission (4.67±2.3 vs. 14.6±1.06, p<0.0001), shorter length of time until MV initiation (1.1±0.1 vs. 3.06±3.54, p=0.03). Group 1 had longer MV (20.0±22.9 vs. 3.53±5.33, p=0.01), more frequent pneumonia (p<0.0001), sepsis (p=0.016) and hospital length (35.4±26.6 vs. 4.1±5.5, p=0.0001). Worsening of neurological disease as an indication for MV was more frequent in group 1 (χ²=12.7, p<0.0001). Neurological, somatic complications and co-morbidities at the time of the NICU admission were similar (p>0.05). Mortality was significantly greater in group 2 (p=0.048).

**Conclusions:** Patients in NICU with respiratory failure and CNL had lower GCS, but shorter MV and had greater mortality. Patients with PMNL had more infective complications, longer MV duration and both NICU and hospital length of stay.

**Disclosure:** Nothing to disclose
PP3091
Pacemaker-induced pseudo-myoclonic status epilepticus following cardiac surgery for infective endocarditis in a young patient with rheumatoid arthritis and embolic cerebellar stroke
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Introduction: Neurological complications occur in about 5% of all cardiac surgeries. Status epilepticus is even less likely to occur. We report the case of abnormal cardiac pacemaker-induced movements that were misdiagnosed as refractory status epilepticus following surgical treatment of infective endocarditis.

Methods: We report the case of a 38-year-old patient with infective endocarditis who developed abnormal cardiac pacemaker-induced movements that were misinterpreted as refractory status epilepticus.

Results: A 38-year-old male patient, with a previous history of rheumatoid arthritis, was admitted due to multiple peripheral emboli and a cerebellar stroke secondary to infective endocarditis with a moveable vegetation on the aortic valve. He underwent surgical removal of the vegetation and reconstruction of the valve, but had severe compromise of the conductive atrio-ventricular system, which prompted the use of a temporary cardiac pacemaker. In the immediate post-operative night, he presented with abnormal generalised movements that were interpreted as convulsive myoclonus. As Phentoyin and Phenobarbital did not stop the ‘seizures’, the Neurology Service was called on the next day. On close examination, the abnormal generalised movements were rhythmic, including a side-to-side head jerk and abdominal contractions. As the rhythmicity was similar to the heart-rate, adjustments to the pacemaker programming were made and the ‘seizures’ subsided immediately (video segment). Further EEG had no clear epileptogenic activity. A few days later he died of multiple clinical complications.

Conclusions: We presented the case of pseudo-status epilepticus due to abnormal movements secondary to the use of a temporary cardiac pacemaker.

Disclosure: Nothing to disclose

PP3092
Socio-economic status does not influence the mortality rates in stroke patients – a nationwide population based research in Taiwan
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Introduction: Low socioeconomic status may be associated with higher mortality rate in the stroke patients. However, the mechanism behind the association and the influence with insurance plan are uncertain. Our study determined whether the patients with very low income were associated with higher mortality rates after stroke.

Methods: All the admitted stroke patients in one million beneficiaries data during 2005 to 2008 were identified from the NHI database. All patients were assigned to three groups based on mean income of Taiwan ($13,529 in 2004 and $15,276 in 2009) and categorized as the very poor, lower income (lower than mean income) or higher income (higher than mean income). The very poor patients were recognized by the special codes issued by our social welfare system with zero copayment for hospital admission. Multivariable analyses were performed to compare the in-hospital mortality rates for stroke patients.

Results: Overall 862 hemorrhagic stroke and 2,133 ischemic stroke patients were included in the analysis. There was no significant difference in mortality rates in the two groups. Compared with the higher income group, the odds ratios of in-hospital mortality for the very poor patients in hemorrhagic stroke was 1.92 (OR=1.92, 95% C.I.=0.18-21.38). And the odds ratios of in-hospital mortality for the very poor patients in ischemic stroke was 1.45 (OR=1.45, 95% C.I.=0.15-14.13).

Conclusions: Compared with the others, the mortality rates in the very poor stroke patients have insignificant higher mortality rates under our insurance plan.

Disclosure: Nothing to disclose
PP3093

Post-partum posterior reversible encephalopathy syndrome in a pre-eclamptic woman with twin pregnancy

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Introduction: Posterior reversible encephalopathy syndrome (PRES) is a serious neurological condition with various clinical manifestation. It is rare during pregnancy. We present a case of PRES in a 35-year-old female immediately after delivery two neonates with Caesarean section. Patient was fully recovered.

Case report: A 35-year-old primigravida with twin pregnancy underwent a cesarean section at 35 weeks gestation because of pregnancy-induced preeclampsia (hypertension, proteinuria, bilateral pedal oedema). Approximately 20 hours after cesarean section occured a rapid decline of visual acuity. We clinically diagnosed cortical blindness. A computed tomography (CT) of the brain showed bilateral occipital hypodensity, CT angiography was without pathological findings. The patient was immediately shifted to the neurological Intensive Care Unit (ICU). Magnetic resonance demonstrated hyper-intensity (T2W2) in the occipital lobes and cerebral trunk. After delivery was patient normotensive. Subsequently after development of neurological symptoms increased BP of the patient to 200/110mm Hg. With respect to clinical presentation and radiological reports, PRES was diagnosed and the patient was prompt treated with intravenous antihypertensive and magnesium sulphate. Visual acuity disappeared until 24 hours, clinical symptoms didn’t repeat, the clinical neurological examination was normal. The patient was discharged after one week with normal blood pressure due to oral antihypertensive medication.

Conclusion: Pre-eclampsia is predisposing factor for PRES in pregnancy. We report a case of uncommon post-partum PRES and focus the importance of early diagnosis and optimal critical care management.

Disclosure: Nothing to disclose

PP3094

EEG patterns in patients with minimally conscious state and vegetative state

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Methods: 23 comatose patients investigated. Vegetative state (VS) and minimally conscious state (MCS) diagnosed. Patients evaluated by Glasgow Coma Scale (GCS). Coma recovered patients accessed by Disability Rating Scale (DRS). Etiologically coma was divided in 5 groups. EEG activity patterns detected by 16 channel EEG. Statistical analysis performed by SPSS 11.0.

Result: Among 23 VS-patients 9 evaluated as MCS. In ¹st group From 6 VS-patients (GCS=5) with theta EEG pattern 2 were defined as MCS, at 1 year one recovered (DRS=14), one died. 4 patients defined at 1 year as PVS. Second group: 3 VS-patients (GCS=5-7) with beta EEG pattern. 2 developed PVS, 1 patient defined as MCS and recovered (DRS=18). 3rd group: 2 VS-patients with alpha EEG pattern (GCS=6) died. 4th group: from 4 VS-patients (GCS=5-7) with delta EEG pattern 2 defined as MCS. At 1 year 1 died and 3 developed PVS. 5th group: from 8 VS-patients (GCS=5-8) 4 diagnosed as MCS, 4 with delta EEG patterns and 4 with theta EEG patterns. 4 VS-patients remained with delta EEG pattern. At 1 year 1 patient with MCS recovered (DRS=11), 2 with MCS and 3 with VS died, 2 patients developed PVS. Correspondence analysis revealed that sound localization (Chi-sqr.=31.10493; p=0.000001)is significantly associated with EEG theta rhythm and with outcome. The high amplitude frontal and temporal lobe theta frequencies in MCS patients were strongly correlated with auditory long latency evoked potentials (p300) arising by binaural stimulation (r=+0.47; p<0.01).

Conclusion: High amplitude theta frequencies in VS-patients where significant for favorable outcome.

Disclosure: Nothing to disclose

PP3095

Abstract withdrawn
**PP3096**

**Effects of low molecular weight hydroxyethyl starch on blood brain permeability and brain edema following traumatic brain injury in rats**

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**Introduction:** Severe traumatic brain injury is one of the leading causes of death and disability in the United States. The urgent resuscitation administrated immediately after the primary injury could attenuate the mortality and morbidity. However, the optimal resuscitation approach is unclear; in particular, treatment of TBI patients with colloids remains controversial due to the side effects of these solutions. Our objective was to examine what molecular range is the optimal choice for the resuscitation after traumatic brain injury.

**Methods:** The Marmarou weight drop model induced severe traumatic brain injury was used in this study. And the rats were administrated with drugs after injury. The motor function was evaluated with Rota rod test and TruScan machine, which evolves the open field test and nose poking tests. The blood brain permeability was tested by Evans blue extravasations, and brain swelling was tested by the wet/dry weight method.

**Results:** In brain water content, the low molecular weight group showed less brain edema and Evans blue extravasation than other groups. And the low molecular weight BPZ improved the motor function then other groups; in addition, the low molecular weight BPZ improved the cognitive function too.

**Conclusions:** Our findings indicate that the low molecular weight hydroxyethyl starch attenuate brain edema and blood brain permeability as well as improve the motor and cognitive deficits in clinical related traumatic brain injury model in rats.

**Disclosure:** Nothing to disclose

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**PP3097**

**Cerebral imaging findings and neurologic outcome of methanol poisoning**

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**Introduction:** Methanol is an extremely toxic alcohol, with organoleptic properties similar to those of ethanol. Intoxication with methanol can lead to severe metabolic acidosis, blindness, neurologic deficits and death. Though rare, basal ganglia necrosis, with or without hemorrhage, is the most common radiologic finding.

**Case report:** A 60-year-old male, with a history of diabetes mellitus, chronic kidney disease and alcohol abuse, presented with abdominal pain, vomiting and, shortly thereafter, a respiratory arrest. He was admitted in the Intensive Care Unit with severe metabolic acidosis, hyperglycemia and a Glasgow Coma score of 6 (E1V1M4). The neurologic examination later revealed a non-reactive bilateral mydriasis and a bilateral Babinski sign. The CT scan showed bilateral putaminal hemorrhagic necrosis. The patient’s family later confirmed the suspicion of methanol intoxication (initially overlooked because of the presumed diabetic etiology of the acidosis), admitting consumption of windshield washer fluid. The evolution was slowly favourable, the patient being discharged however with complete blindness and mild bradykinesia.

**Conclusions:** The classic radiological finding in methanol intoxication is bilateral putaminal necrosis. Many theories have tried to explain this selectivity, among which a higher metabolic demand of the basal ganglia, a deficient venous drainage leading to a higher concentration of toxic metabolites and a predisposition to watershed infarcts due to their lying in arterial junction territories. The hypoxemic episode may have as well contributed in our case to these lesions. Methanol intoxication is a rare cause of parkinsonism and must always be considered in patients with metabolic acidosis and neurologic deficits.

**Disclosure:** Nothing to disclose

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**PP3098**

**Abstract withdrawn**
**PP3099**

**Limited efficacy of engrafted neural stem and progenitor cells for severe spinal cord injury**

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**Introduction:** There have been so many reports about the effectiveness of engrafted neural stem/progenitor cells (NSPCs) for injured spinal cord. Most evaluations of the efficacy, however, are applied to mild or moderate injured model. The efficacy of NSPCs administration to the severe injured spinal cord is still unknown. The purpose of this study is to investigate the efficacy of NSPCs administered to the severe injured spinal cord.

**Methods:** Contusive spinal cord injury of three types strength (mild: 50kdyn, moderate: 70kdyn, severe: 90kdyn) was performed in adult mice at the thoracic 10th level. NSPCs (5×10⁵ cells per mouse) were grafted into the center of the injured site immediately after injury. Control mice only received conditioned medium.

**Results:** Motor function recovery was better in the mild and moderate injured models than in each of the control groups. No function recovery was detected in the severe injured model. The engrafted NSPCs of all three groups became differentiated into neural and glial cells. Both of the survival rate and the differentiation of engrafted NSPCs revealed no significant difference in all groups. The quantitative PCR analysis revealed that the neurohumoral expressions of engrafted NSPCs were significantly higher than in the mild and moderate injured models than in the severed injured model.

**Conclusions:** In this study, we clarified that the efficacy of NSPCs is dramatically suppressed only applied to the severe injured model. These results highlight the importance of considering therapeutic protocols individually of spinal cord injury patients in accordance with the degree of severity.

**Disclosure:** Nothing to disclose

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**PP3100**

**The value of APACHE II, NIH and FOUR scores for determination of early prognosis in acute ischemic stroke**

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**Introduction:** In order to determine the prognosis of stroke patients in Neurology Intensive Care Unit, APACHE II, NIH and FOUR scales are used. In this study, the role of mortality prediction of these scoring systems were investigated.

**Methods:** In this retrospective study, 105 stroke patients admitted to Neurology Intensive Care Unit within the first 48 hours from symptom onset were included. Forty seven patients were female and 58 patients were male. The mean age was 71.6. The stroke risk factors and lesion characteristics were analysed in relation with mortality. The APACHE II, NIH and FOUR scores on admission 1, 2, 3 and 10 days were also calculated and the relationship between these scores and mortality were investigated.

**Results:** A total of 49 (46.7%) patients died in the hospital. The age, sex, duration of hospitalization, lesion size and localization was not found associated with the mortality. The state of consciousness at presentation, infection, brain edema and need for mechanical ventilation were found significantly associated with mortality. APACHE II, NIH, and FOUR scores are found to be effective in predicting mortality. According to ROC analysis, the first day the sensitivity ranking in descending order; FOUR > NIH > APACHE II, descending sequence specificity of APACHE II > NIH > FOUR formed.

**Conclusions:** All of the scale were found effective predicting of prognosis in acute stroke. Ranking first in the NIH score, second FOUR and third APACHE II score took place.

**Disclosure:** Nothing to disclose
PP3101
Changes of blood supply in patients who have suffered head injuries of various degrees of severity
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PP3102
A systemic review and meta-analysis of the impact of peri-operative antiplatelets and antico-agulants on the clinical course of chronic subdural haematoma
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PP3103
Adult case with isolated complex III deficiency of the mitochondrial respiratory chain presenting acute encephalopathy
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PP3105
Establishment of new focal weight drop model of traumatic brain injury
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PP3106
Therapeutic plasma exchange for neurologic disorders: single center experiences
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PP3107
Acute hyperglycemia exacerbates functional outcomes in human and mouse spinal cord injury via NF-κB pathway
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PP3104
A case of non-convulsive status epilepticus in acute ischemic stroke
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