Purpose: Despite promising DBS results, the mechanism of action, the long-term effects and the possible anti-epileptogenic properties of DBS remain undetermined. In this animal experimental study, we evaluated the effect of DBS on the development of spontaneous seizures in the kainic acid rat model.

Method: Rats were implanted with a bipolar DBS electrode in the right hippocampus and a bipolar EEG recording electrode in both hippocampi. 24 hours after kainic acid (KA) induced status epilepticus (SE), one group (n=6) was subjected to short term DBS (ST-DBS) (poisson distributed stimulation (PDS), 130 PPS, 100μs PW, 100μA) of 1 week, a second group (n=7) was subjected to long term DBS (LT-DBS) (PDS, 130 PPS, 100μs PW, 100–400μA) of 10 weeks. A control group (n=9) received sham stimulation (SHAM). EEG was recorded continuously during 14 weeks in the LT-DBS and SHAM group. In the ST-DBS group, EEG was recorded continuously during the first 8 weeks of the experiment.

Result: Development in daily seizure frequency is significantly different between LT-DBS and SHAM. Seizure frequency in the SHAM group rose from 0.1 ± 0.1 seizures/day in week 1 to 26.6 ± 3.1 seizures/day in week 14. This rise in seizure frequency was significantly reduced in the LT-DBS group (0.5 ± 0.1 seizures/day in week 1 to 1.2 ± 4.14 ± 1 seizures/day in week 14). No differences between SHAM and ST-DBS rats were observed.

Conclusion: LT-DBS initiated shortly after SE reduces the development of spontaneous seizures. These results show that temporary treatment with hippocampal DBS can affect disease progression.

p087
SUDEP FOLLOWING STATUS EPILEPTICUS

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Purpose: Status epilepticus (SE) is a life-threatening complication of epilepsy and a medical emergency. However, for some, an episode of SE is their first presentation of epilepsy.

Method: Using the Secure Anonymised Information Linkage (SAIL) databank at we scrutinised primary care records in Wales for patients who have had an episode of SE. In order to better understand the prognosis of epilepsy following SE we looked at contemporaneous comorbidities and mortality records.

Result: Since 1991 there have been 2.9/100,000 episodes of SE recorded in Wales. 732 people were identified as having SE and there were 174 deaths recorded; 15.5% were within six months of SE. In total there were 13 potential cases of SUDEP. 12.8% of people who first presented in SE (and later died) had epilepsy as a cause of death compared to 3.1% of those who had pre-existing epilepsy prior to SE (p>0.02). 2.5 times more people presenting with SE without known epilepsy were known to have a brain tumour (n=10, 3.6%). On Seven occasions more people with epilepsy had a change of medication within a month of SE (32%) than people who had SE without a prior diagnosis of epilepsy (4%; p>0.0001).

Conclusion: This nationwide study identifies that SE as a first presentation of epilepsy is associated with an increased risk of SUDEP although not all cause mortality. We believe that SE occurring from pre-existing epilepsy may be triggered by poor medication concordance or change in drug regime, rather than a new symptomatic cause such as tumour or stroke.

p088
LENTIVIRAL VECTOR-DELIVERED SMALL INTERFERING RNA TARGETING TO HIF-1A GENE EFFECT ON MDR1B GENE EXPRESSION IN RAT ASTROCYTES MODEL INDUCED BY CORIARIA LACTONE

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Purpose: Over-expression of multidrug resistance gene (MDR1) is an important mechanism of refractory epilepsy. Epileptic seizure may lead to accumulation of hypoxia-inducible factor-1a (HIF-1a) in hippocampus and temporal lobe. MDR1 gene-promoter contains a functional HIF-1a binding site, which is known as the classical hypoxia response element (HRE). Thus, we have the hypothesis that expression of Pgp is up regulated by HIF-1a in refractory epilepsy, which has been observed in cancer pharmacoresistance research. So the objective of this study is to explore the correlation of Pgp expression with HIF-1a in refractory epilepsy rat model.

Method: We established a kindling model of MDR temporal lobe epilepsy (TLE) by intramuscular injection Sprague-Dawley rat with coriaria lactone (CL), and served normal SD rats with normal sodium (NS) injection as control group. The fragment gene carrying rat HIF-1a siRNA was cloned into lentiviral vector, identified with PCR and sequencing analysis. The correct reconstructed lentiviral vector was packaged into HEK 293 cells, then amplified and purified and injected into rat lateral cerebral ventricle. The expression level of MDR1b and its translational product P-glycoprotein (Pgp) were monitored with Real-time PCR and Western-blot analysis before lentiviral vector transfection and after (at different times).

Result: The recombinanted lentiviral vectors target to rat HIF-1a were successfully constructed and packaged. It can infected the rat astrocytes with higher efficiency. For the rat model, the mRNA and protein levels of HIF-1a increased significantly (P<0.05) in hippocampus and temporal lobe, compared with control group. An accordant result was obtained in the expression of Pgp. After reconstructed lentiviral transfection, the levels of HIF-1a and Pgp decreased at the same time in the same brain region.

Conclusion: Our study demonstrates that HIF-1a expression increased in accordance with Pgp in hippocampus and temporal lobe of refractory epilepsy rat model induced by CL. And the recombinant lentivirus delivered Small Interfering RNA targeting to HIF-1a gene can suppressed not only the overexpression of HIF-1a, but also the expression of MDR1b in model brain without obvious cell toxicity. So that HIF-1a may take an more important role in the mechanism of refractory epilepsy. further more, this study may provide a promising technique for refractory epilepsy remedy.

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ELECTROGRAFIC SEIZURES AND PERIODIC EPILEPTIFORM DISCHARGES IN PATIENTS WITH POST-ANOXIC COMA

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Purpose: We aimed to examine the predictors and prognostic value of electrographic seizures (ESZs) and periodic epileptiform discharges (PED) of post-anoxic coma patients in intensive care unit (ICU).

Method: The clinical, EEG and neuroimaging findings of consecutive anoxic comatose patients due to cardiac arrest were studied between 2009 and 2011. EEG data was reviewed by 2 investigators independently.

Result: Seventeen patients (7 F; mean age: 59.8±16.9) were admitted to our study. The mean duration of hospitalization was 54.6 days. The outcome included death in 7 patients, severe neurological deficits in 6 patients. Thirteen patients had Glasgow Coma Score.

Conclusion: MSE and various electrographic patterns detected in patients with post-anoxic coma could not predict the mortality. Larger prospective studies are warranted to determine the impact of these patterns more precisely.

p090
STATUS EPILEPTICUS, A HOSPITAL BASED SYSTEMIC CASES REVIEW IN SOUTHERN TAIWAN

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Purpose: Little are studied the systemic clinical features of status epilepticus (SE) in Southern Taiwan. To have a basic understanding of these features, including age and sex distributions, SE types, aetiologies, prognosis, anatomic correlations, validities of the investigation tools, etc; and to promote further clinical researches in SE, a systemic cases review was carried out.

Method: Epilepsy cases admitted to the Chiayi Christian Hospital or the National Cheng Kung University, Douliou branch, during 2001–2011, were reviewed. Inclusion criteria were those who fit current SE definition suggested by the ILAE, ie continuous seizures up to 5 minutes without stopping, or no return of consciousness to the baseline between 2 or more consecutive seizures. Exclusion criteria were those with incomplete medical records or poor evidence in suggesting SE.

Result: Altogether 173 patients entered the systemic cases review. Male to female ratio was 103:73 (59.5% vs 40.5%). Most patients were in their seventies [40/173 (23.1%)] and sixties [37/173 (21.4%)]. 145 patients had convulsive SE, and 28 had non-convulsive SE. The leading causes in SE were cerebral vascular disease [59/173 (34.10%)], metabolic disorders [48/173 (27.7%)], and poor seizures control [43/173 (24.8%)]. Frontal and temporal lobe lesions were the leading damages seen in images. Epileptiform discharges did not always correlate the lesions found in images.

Conclusion: Several issues raised that need further study, including the discrepancy in sex distribution; the correlation between EEG and images findings, the mechanism causing higher risks in having SE with frontal-temporal lesions, and the impact of co-morbidities in causing SE in the elderly.

p091
IV LACOSAMIDE AS THERAPEUTIC OPTION FOR REFRACTORY STATUS EPILEPTICUS BEFORE COMA INDUCTION

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Purpose: Refractory status epilepticus (RSE) is a neurological condition that often requires sedation to be controlled. IV Lacosamide is a novel antiepileptic drug that may provide some benefits in RSE before inducing coma.

Method: We reviewed the data concerning the efficacy and safety of IV Lacosamide for RSE in 21 consecutive patients.

Result: Patients' average age was 60 [14–85] years-old. Eleven patients had preexisting epilepsy. The most frequent RSE was convulsive in 70%. Seizure semiology was most likely complex partial (11) or generalized tonic-clonic (6). The RSE was classified as remote symptomatic (9), acute symptomatic (8) and cryptogenic (3). The most frequent etiology was the vascular lesion (50%). The IV Lacosamide was started with an initial bolus of 200 mg, and then followed by maintenance or individualized daily dose increases, depending on the electroclinical response. Lacosamide was used as a second drug (1), third drug (7) or fourth drug (12). Overall, RSE cessation was achieved in 55% of patients, of whom 40% within 72 hours. The highest rates of success were obtained by combining benzodiacepines, levetiracetam and Lacosamide. Four patients died during the RSE and six required further sedation. Somnolence and gastrointestinal symptoms were all the adverse events attributable to lacosamide in two patients. IV LCM was switched to equal doses per oral at hospital discharged. Five patients died remotely and 10 have remained seizure-free during the follow-up (5 months [1–20]). IV LCM can be an option for RSE as a previous step to sedation in the protocol of treatment of the RSE.

p092
SELECTIVE LENTIVIRAL MEDIATED TARGETING OF GLIA CELLS IN THE CENTRAL NERVOUS SYSTEM

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Purpose: In a complex tissue of the central nervous system (CNS), cell cross-talk is essential to preserve normal functions. Current tools for dissecting the molecular mechanisms that mediate cell-cell interactions within the brain are technically challenging, time consuming and difficult to control. In this study we report the establishment and validation of a lentiviral-mediated gene-targeting platform to specific cells in the CNS.

Method: Using lentiviral-mediated gene-targeting platform that combines unique features of self-inactivated lentiviruses that promote stable gene delivery into non-dividing cells and efficient display of single-chain variable region human fragments (scFv) or soluble IgG on the surface of viral particles.

Result: In vitro, cells that express the receptor-binding domain of the SARS-CoV spike glycoprotein were targeted by engineered sindbis pseudotyped lentiviruses that incorporate specific scFvFc attachment moieties. Additionally, in vitro targeted gene expression to primary astrocytes was also demonstrated, using engineered lentiviruses that incorporate Aquaporin 4 and GLAST IgG. In vivo, lentiviral targeting of astrocytes and oligodentrocytes progenitor cells that express the chondroitin sulfate proteoglycan, NG2 was obtained using viral particles that display an anti-GLAST and anti-NG2 IgG antibodies, repectively.

Conclusion: We conclude, that this novel approach will be implemented in the model of epilepsy to study the role of astrocytes in the pathogenesis of the disease and challenge its use as a therapeutic tool.

p093
ASYMMETRIES OF SLEEP SPINDLES IN HUMAN EPILEPSY WITH TEMPORAL OR FRONTOTEMPORAL FOCUS

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