evaluated off-DBS and during stimulation delivered through each electrode contact in a randomised order.

Results ERNA amplitude, beta power and contact proximity to the anatomically ideal stimulation location predicted magnitude of therapeutic response to DBS. However, after exclusion of covariance, ERNA amplitude remained the only significant predictor of DBS response.

Conclusion ERNA is a readily recordable, large amplitude signal that accurately correlates with motor response to DBS. It holds significant potential as a biomarker for guiding electrode implantation, ideal contact selection, automated parameter fitting and delivery of closed-loop DBS.

REFERENCE

1. Sinclair NC, McDermott HJ, Bulluss KJ, Fallon JB, Perera T, Xu SS, et al. Subthalamic nucleus deep brain stimulation evokes resonant neural activity. *Annals of neurology* 2018;**83**(5).

004

VESTIBULAR EVENT MONITORING IN THE EMERGENCY DEPARTMENT

^{1,2}Benjamin Nham*, ¹Nicole Reid, ^{1,2}Emma Argæet, ^{1,2}Allison Young, ^{3,2}Kendall Bein, ^{1,2}Gabor M Halmagyi, ^{1,2}Miriam S Welgampola. ¹Institute of Clinical Neurosciences, Royal Prince Alfred Hospital, Sydney, NSW, Australia; ²Central Clinical School, University of Sydney, Camperdown, NSW, Australia; ³Emergency Medicine, Department of Emergency Medicine, Royal Prince Alfred Hospital, Camperdown, NSW, Australia

10.1136/jnnp-2019-anzan.4

Introduction Acute vertigo is often accompanied by ictal-nystagmus which may assist with diagnosis. We examine the merits of a structured assessment combined with vestibular event-monitoring in the Emergency Department (ED).

Methods We undertook a structured clinical assessment and video-nystagmography in 220 non-consecutive patients presenting to a public-hospital ED with acute vertigo, during a 10-month period. The records of 115 consecutive vertiginous patients who underwent standard-assessment were compared.

Results For the structured assessment group: 54% presented with acute vestibular syndrome (AVS), 24% with episodic spontaneous vertigo (EVS), and 20% with recurrent positional-vertigo (RPV).

For AVS (n=119), most common diagnoses were vestibular neuritis (34%), stroke (34%) and vestibular migraine (13%). Nystagmus slow-phase velocity (SPV) for VN, stroke and VM were $11 \pm 5.5^\circ/\text{s}$, $5.6 \pm 2.5^\circ/\text{s}$, $5.4 \pm 5.9^\circ/\text{s}$; Mean ipsilesional video-head impulse gains were 0.51 ± 0.29 , 0.89 ± 0.20 and 0.96 ± 0.13 . For EVS (n=53), diagnoses included vestibular migraine (63%), Meniere's Disease (11%) and others (26%). Nystagmus SPV was $5.4 \pm 3.6^\circ/\text{s}$, $7.6 \pm 6.3^\circ/\text{s}$, $4.1 \pm 1.5^\circ/\text{s}$. In RPV (n=43), common diagnoses were posterior-canal BPPV (66%), horizontal-canal BPPV (23%), migraine (7%). Positional nystagmus SPV profile showed Peak SPV of $42.5^\circ/\text{s}$, $77.6^\circ/\text{s}$, $20.64^\circ/\text{s}$ and Time-constants of 6.52s, 22.51s, 34.56s for Posterior-canal BPPV, Horizontal-canal BPPV and Atypical Positional-Vertigo. A final diagnosis was reached in 96% of patients.

In the ED control group, only 77% were separated into spontaneous or positional-vertigo. A diagnosis was provided in 57% and was concordant with the history and examination in 34%.

Conclusion Vestibular event-monitoring and structured clinical assessment secured a diagnosis in 96% of cases compared with 34% for the control group, reinforcing its merit.

005

ELECTROCLINICAL CHARACTERISTICS OF AUTOIMMUNE ENCEPHALITIS AS OUTCOME BIOMARKERS

^{1,2}Robb Wesselingh*, ^{1,2,3}James Broadley, ^{4,5}Chris Kyndt, ^{4,5}Katherine Buzzard, ^{1,2}Terence O'Brien, ^{1,2,4}Mastura Monif. ¹Neurosciences, Monash University, Melbourne, VIC, Australia; ²Neurosciences, Alfred Health, Melbourne, VIC, Australia; ³Neurosciences, Monash Health, Melbourne, VIC, Australia; ⁴Neurosciences, Melbourne Health, Melbourne, VIC, Australia; ⁵Neurosciences, Eastern Health, Melbourne, VIC, Australia

10.1136/jnnp-2019-anzan.5

Introduction Seizures are a common characteristic of Autoimmune encephalitis (AIE). The use of the electroclinical characteristics to assist in the diagnosis of AIE has been explored¹ however use of specific electroencephalogram (EEG) changes has not been examined with regards to outcome prediction.

Methods Patients with AIE were recruited retrospectively across 4 hospitals in Victoria. Clinical Data was collected during admission and at final follow-up. EEGs of patients were reviewed using an objective proforma. Associations between EEG biomarkers and clinical outcomes were demonstrated using logistic regression modelling.

Results We recruited 88 patients with AIE and available EEGs. Presence of rhythmic delta, superimposed fast activity and an abnormal background were significantly more common in N-methyl-D-aspartate receptor (NMDAR) antibody associated AIE patients ($p < 0.05$). ICU admission was associated with rhythmic delta epileptiform activity (OR 3.25, $p = 0.046$), sharp elements in the EEG abnormality (OR 3.55, $p = 0.05$), and an abnormal background rhythm (OR 3.56, $p = 0.03$). Development of drug resistant epilepsy was associated with prolonged duration of abnormality on EEG (OR 11.99, $p = 0.013$), and sharp elements in the EEG abnormality (OR 7.29, $p = 0.02$).

Conclusion We have identified EEG biomarkers that differentiate NMDAR AIE from other subtypes, and likely represents an objective description of extreme delta brush which has previously been described in NMDAR AIE.² We have also demonstrated biomarkers associated with important outcomes that can be used to help guide treatment and prognosis.

REFERENCES

1. Limotai C, Denlertchaikul C, Saraya AW, Jirasakuldej S. Predictive values and specificity of electroencephalographic findings in autoimmune encephalitis diagnosis. *Epilepsy Behav* 2018;**84**:29–36.
2. Veciana M, Becerra JL, Fossas P, Muriana D, Sansa G, Santamarina E, et al. EEG extreme delta brush: An ictal pattern in patients with anti-NMDA receptor encephalitis. *Epilepsy Behav* 2015;**49**:280–5.

006

CAN SEIZURE-RELATED HEART RATE DIFFERENTIATE EPILEPTIC SEIZURES FROM PSYCHOGENIC NON-EPILEPTIC SEIZURES?

¹Hue Mun Au Yong*, ¹Erica Minato, ²Eldho Paul, ^{1,3}Udaya Seneviratne. ¹Neurology Department, Monash Health, Clayton, VIC, Australia; ²Monash Centre for Health Research and Implementation, School of Public Health and Preventive Medicine, Monash University, Clayton, VIC, Australia; ³Department of Medicine, St Vincent's Hospital, University of Melbourne, Melbourne, VIC, Australia

10.1136/jnnp-2019-anzan.6

Introduction This study aims to (i) evaluate the diagnostic sensitivity, specificity and predictive values of seizure-related heart rate (HR) in differentiating epileptic seizures (ES) from

psychogenic non-epileptic seizures(PNES), (ii)define the most useful point of HR measurement: pre-ictal, ictal-onset, maximal-ictal or post-ictal, and (iii)define the HR cut-off points to differentiate ES from PNES.

Methods All video EEG(VEEG) at Monash Health from May 2009 to November 2015 were retrospectively reviewed. Baseline(during wakefulness), one-minute pre-ictal, ictal-onset, maximal-ictal and one-minute post-ictal HR were measured for each ES and PNES event. Events less than ten seconds or with uninterpretable ECG due to artefacts were excluded. ROC curve analysis was performed to study the diagnostic accuracy reflected by area under the curve(AUC). The AUC was interpreted as follows; ≤ 0.5 , differentiation of PNES from ES no better than chance; 0.80–0.89, good differentiation; and 0.9–1, excellent differentiation.

Results VEEG of 341 ES and 265 PNES from 130 patients were analysed. The AUC for pre-ictal, ictal-onset, maximal-ictal and post-ictal HR were found to have poor differentiation between ES and PNES. Comparing PNES and bilateral tonic-clonic ES, AUC for absolute maximal-ictal HR was 0.84(CI 0.73–0.95) and for absolute post-ictal HR was 0.90 (CI 0.81–1.00). Using Youden's index, to diagnose tonic-clonic ES, the optimal cut-off point for absolute maximal-ictal HR was 114bpm (sensitivity 84%;specificity 82%;PPV 26.7%,NPV 98.5%) and for absolute post-ictal HR was 90bpm(sensitivity 91%;specificity 82%;PPV 30.3%;NPV 99.1%).

Conclusions These findings suggest that seizure-related HR increase is useful in differentiating bilateral tonic-clonic ES from PNES. Based on the AUC, the best diagnostic measure.

007

THE OUTCOME OF A COHORT OF PREGNANCIES IN AUSTRALIAN WOMEN WITH EPILEPSY

¹Frank JE Vajda*, ¹Janet E Graham, ¹Alison A Hitchcock, ²Cecilie M Lander, ³Terry J O'Brien, ⁴Mervyn J Eadie. ¹Australian Pregnancy Register, Parkville, VIC, Australia; ²Neurology, Royal Brisbane and Women's Hospital, Herston, QLD, Australia; ³Medicine, Alfred Hospital, Melbourne, VIC, Australia; ⁴Medicine, Queensland University, Brisbane, QLD, Australia

10.1136/jnnp-2019-anzan.7

Background The Australian Pregnancy Register (APR) established in 1998, collects data concerning the hazard of foetal malformations from intrauterine exposure to antiepileptic drugs.

Methods 4 telephone interviews, ethical approval, informed consent, observational study, statistical analyses.

Results By December 2017, the APR recorded 1879 pregnancies, followed prospectively. There had been 1766 live births (94.0%), 5 stillbirths (0.3%), 54 spontaneous abortions (2.9%), and 30 induced abortions (1.6%), while 24 pregnancies had an unknown outcome due to loss of contact with the women involved (1.3%). Foetal malformations had occurred in 71 of the live-born infants. Of the induced abortions, 15 had been for intrauterine foetal death, 10 for major foetal malformation (spina bifida, anencephaly and left heart underdevelopment), 2 for detected chromosome defects and 3 for maternal reasons (major illness in 2).

By the end of the post-pregnancy year a further 99 pregnancies had become unavailable for follow-up (resulting in an 84.9% live-born infant final retention rate). An additional 33

pregnancies that had resulted in late recognised foetal malformations had been identified, nearly all in the first 6 months after birth. Intrauterine valproate exposure was involved in 447 of the 1731 antiepileptic drug treated pregnancies, a malformation-carrying pregnancy rate of 11.86%, as compared with a rate of 2.70% in the 148 drug-unexposed pregnancies (O.R. = 4.84; 95% C.I. 1.72, 13.62), used as comparators.

Conclusion This report confirms previous interpretations of the APR data, also providing insights into the pregnancies of women with epilepsy that did not result in live-born offspring.

008

ASSOCIATIONS BETWEEN COMORBIDITIES AND ADVERSE EVENTS OF ANTIEPILEPTIC DRUGS AND QUALITY OF LIFE: A SURVEY OF EPILEPSY PATIENTS IN AUSTRALIA

¹Jeremy M Welton*, ²Christine Walker, ³Kate Riney, ⁴Alvin Ng, ⁵Lisa M Todd, ⁶Wendyl D'Souza. ¹UCB Pharma, Melbourne, VIC, Australia; ²Chronic Illness Alliance, VIC, Australia; ³Queensland Children's Hospital, QLD, Australia; ⁴Costello Medical Singapore Pte Ltd, Singapore; ⁵Epilepsy Action Australia, Sydney, NSW, Australia; ⁶Department of Medicine, St Vincent's Hospital, The University of Melbourne, Melbourne, VIC, Australia

10.1136/jnnp-2019-anzan.8

Introduction This study explored the impact of specific types of comorbidities and adverse events (AEs) from antiepileptic drugs (AEDs) on quality of life (QoL) among adult patients with epilepsy (PwE) in Australia.

Methods Cross-sectional surveys were completed by PwE, or caregiver proxies, recruited via the online pharmacy application MedAdvisor and Australian PwE Facebook groups from May–August 2018. Data were collected on demographics, epilepsy severity and management, AEs, comorbidities, and QoL (using QOLIE-10-P total score).¹ Multiple linear regression models were constructed to explore associations between AEs or comorbidities and QOLIE-10-P, with possible confounders determined using stepwise selection.

Results 978 responses were included (mean age 44.5 years, 64% female, 52% employed). 97% reported recent AED use, 47% on AED monotherapy, 35% exposed to ≤ 2 lifetime AEDs, and 55% seizure-free for >1 year. After stepwise selection, control variables included in both models were: time since diagnosis, employment status, seizure frequency, number of currently prescribed AEDs, and number of general practitioner visits per year. In the model for comorbidities, 'psychiatric disorders' was associated with the largest QOLIE-10-P decrease (-23.30, $p < 0.001$). In the model for AEs, which additionally controlled for depression and anxiety disorder, 'memory problems' was associated with the largest decrease in QOLIE-10-P (-14.27, $p < 0.001$).

Conclusions In this survey of Australian PwE, of which many had relatively well-controlled epilepsy, psychiatric and memory problems were common and associated with the greatest detrimental impact on QoL. Further research is needed to understand causality, relationships between possibly interrelated or overlapping symptoms, and management strategies. UCB Pharma-sponsored.

REFERENCE

1. Cramer JA, Perrine K, Devinsky O, Meador K. A brief questionnaire to screen for quality of life in epilepsy: The QOLIE-10. *Epilepsia* 1996;**37**:577–582.