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### MEMORY OUTCOMES IN PATIENTS WITH AUTOIMMUNE ENCEPHALITIS – A STUDY OF THE AUSTRALIAN AUTOIMMUNE ENCEPHALITIS CONSORTIUM

<sup>1,2</sup>Sarah Griffith\*, <sup>1,2</sup>Robb Wesselingh, <sup>1,2</sup>Nabil Seery, <sup>1</sup>Tiffany Rushen, <sup>3,4</sup>Chris Kyndt, <sup>5</sup>Brian Long, <sup>5</sup>Udaya Seneviratne, <sup>4,6</sup>Tomas Kalincik, <sup>3,4</sup>Katherine Buzzard, <sup>1,2</sup>Helmut Butzkueven, <sup>1,2</sup>Terence O'Brien, <sup>1,2</sup>Rubina Alpitsis, <sup>4,6</sup>Charles Malpas, <sup>1,2</sup>Mastura Monif. <sup>1</sup>Monash University, Melbourne, VIC, Australia; <sup>2</sup>Alfred Health, Melbourne, VIC, Australia; <sup>3</sup>Eastern Health, Melbourne, VIC, Australia; <sup>4</sup>Melbourne Health, Melbourne, VIC, Australia; <sup>5</sup>Monash Health, Melbourne, VIC, Australia; <sup>6</sup>University of Melbourne, Melbourne, VIC, Australia

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**Background & Objective** Patients with autoimmune encephalitis (AE) can present with a variety of memory complaints. However, it is difficult to draw strong conclusions regarding memory as there has been significant heterogeneity in the assessment of memory in this group.

**Methods** 52 patients who met criteria for possible AE were recruited prospectively across four hospitals. Patients underwent a comprehensive examination of memory using 4 established scales of memory. Summary statistics were computed to compare memory scores to normative data. Independent samples *t*-tests were computed between different AE groups. Exploratory cluster analysis was performed to identify memory subgroups.

**Results** Comparing AE cohort to normative data, none of the memory measures were significantly below expectations in the AE cohort. Frequency data demonstrated that 20% of the total cohort demonstrated impairments on delayed visual memory, acquisition of a word list and interference and long-delay recalls of this list. The anti-LGI-1 ab-mediated AE group performed poorer on the task of delayed story recall than the anti-NMDAR ab-mediated AE group. Exploratory cluster analysis identified 3 clusters – 1) 20.93% of patients and characterised by scores above the normative mean, 2) 41.86% of patients and characterised by memory scores below the normative mean, and 3) 37.21% of patients which suggested heterogeneity in memory performances.

**Discussion** While patients with AE can have similar memory scores compared to age/sex-matched non-AE counterparts, a frequency and cluster analysis suggests that a proportion of AE patients can present with memory impairment across tests of memory.

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### EXECUTIVE DYSFUNCTION IN PATIENTS WITH AUTOIMMUNE ENCEPHALITIS – A STUDY OF AUSTRALIAN AUTOIMMUNE ENCEPHALITIS CONSORTIUM

<sup>1,2</sup>Sarah Griffith\*, <sup>1,2</sup>Robb Wesselingh, <sup>1,2</sup>Nabil Seery, <sup>1</sup>Tiffany Rushen, <sup>3,4</sup>Chris Kyndt, <sup>5</sup>Brian Long, <sup>5</sup>Udaya Seneviratne, <sup>1,4</sup>Tomas Kalincik, <sup>3,4</sup>Katherine Buzzard, <sup>1,2</sup>Helmut Butzkueven, <sup>1,2</sup>Terence O'Brien, <sup>1,2</sup>Rubina Alpitsis, <sup>1,4</sup>Charles Malpas, <sup>1,2</sup>Mastura Monif. <sup>1</sup>Monash University, Melbourne, VIC, Australia; <sup>2</sup>Alfred Health, Melbourne, VIC, Australia; <sup>3</sup>Eastern Health, Melbourne, VIC, Australia; <sup>4</sup>Melbourne Health, Melbourne, VIC, Australia; <sup>5</sup>Monash Health, Melbourne, VIC, Australia

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**Objectives** The objective of this study was to characterise executive functions (EF), and determine which aspects of EF are most affected in patients with Autoimmune Encephalitis (AE).

**Methods** 52 patients who met the criteria for possible AE were recruited prospectively across tertiary hospitals in

Melbourne, Australia. Patients underwent comprehensive assessment of EF including examination of auditory working memory, cognitive flexibility, initiation, and disinhibition. Summary statistics were computed to characterise EF tests. Independent sample *t*-tests were employed to compare performances between patient groups. Pattern analysis was employed to derive patterns of executive dysfunction.

**Results** A test of cognitive flexibility (TMT (B)) was significantly below normative data for the seronegative group. Tests of cognitive flexibility and initiation were the most frequently impaired EF tasks across the total cohort, seropositive and seronegative groups. 17 patterns of EF deficits were observed, the most frequent being that of intact EF. Secondly, tests of cognitive flexibility and initiation were the most frequently included tests in patterns of impairment.

**Conclusions** Executive dysfunction appears to be a core cognitive outcome in patients with AE. Ineffective set shifting and strategic lexical retrieval, reflective of cognitive flexibility and initiation, appear to be frequently impacted. These findings may suggest that AE is associated with the disruption of widespread networks beyond the limbic regions.

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### DEGLUTITION SYNCOPE, THE VAGUS NERVE AND THE CARDIAC CONDUCTION SYSTEMS (CCS)

Daniel Hougassian\*. *Neurology, Prince of Wales Hospital, Sydney, NSW, Australia*

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#### Objectives

- Describe new findings on the Sino-Atrial Node
- A patient with no known heart disease presented with Deglutition Syncope (DS) – a rare, poorly-defined entity
- Numerous associated dysfunctions of gastrointestinal, cardiac and autonomic nervous systems have previously been implicated in DS
- Some, such as cardiac conduction disease, may be of grave import and require urgent management

#### Methods

- Review of recent Deglutition Syncope and CCS literature

#### Results

- CCS studies on single sino-atrial node (SAN) pacemaker cells demonstrate that most SAN pacemaker cells are not actively 'pacing' but rather are 'dormant', and only activated as part of an ensemble
- Most SAN cells produce sub-threshold Ca potentials; how they summate to show electrical field effects is an area under active investigation
- Many, previously-posed causes of DS, now seem to have a more nuanced interaction with the heart
- Vagus nerve effects on the heart – at Sino-Atrial Node, Atrio-Ventricular Node, conducting system and myocardium are numerous and, at times, opposing

#### Conclusions

- In light of new studies, Vagal, sympathetic and humoral effects on the physiology of the heart – and as a cause for DS need realignment
- Small neuro-humeral changes – by acting on particular subsets of 'pacing' cells – may cause results seemingly out of proportion to their activity – both efficacious and toxic