

**P049** **RESPONSE TO PITOLISANT THERAPY IN PATIENTS WITH DIFFICULT TO TREAT HYPERSOMNIA**

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Limited treatment options are available for patients with central hypersomnia, and many patients continue to have significant symptoms despite use of established therapies. Pitolisant is a novel wakefulness-promoting agent which has been demonstrated to reduce sleepiness in treatment naïve patients with narcolepsy. Little is known about the utility of Pitolisant therapy in patients whose symptoms are refractory to other available medications. We assessed outcomes in hypersomnia patients who were resistant to or intolerant of conventional stimulant therapy.

Patients with objectively confirmed central hypersomnia, who had persistent EDS despite use of  $\geq 2$  wakefulness promoting agents, were commenced on Pitolisant via a pharmacist-led medication management clinic. We prospectively recorded the Epworth Sleepiness Scale (ESS), Pittsburgh Sleep Quality Index (PSQI), and quality of life scores (EQ-5D visual analogue scale) at initiation and after 12 weeks of Pitolisant therapy. For the purposes of this analysis we defined responders as those with a reduction in ESS of  $\geq 2$ .

A total of 38 patients were given Pitolisant (55% female; 66% NT1; age  $41.2 \pm 13.5$  years). 6 stopped treatment due to adverse effects (50% insomnia; 33% apparent allergic reaction). Among those who completed 12 weeks of therapy, ESS reduced from  $18.4 \pm 4.1$  to  $15.5 \pm 5.1$  ( $p=0.001$ ), PSQI reduced from  $10.5 \pm 3.4$  to  $8.4 \pm 4.5$  ( $p=0.006$ ), and EQ-5D improved from  $52 \pm 22$  to  $63 \pm 19$  ( $p=0.004$ ). Of the cohort, 17 (45%) were defined as responders – no significant differences in demographic factors, underlying diagnosis, or baseline symptom burden were observed between responders and non-responders.

In a cohort of patients with difficult to treat central hypersomnia, Pitolisant therapy led to a reduction in daytime sleepiness and improved quality of life scores in a significant proportion of patients. Pitolisant may be a useful adjuvant therapy in some patients with treatment refractory hypersomnia.

**P050** **MODULATION OF SLEEP USING ELECTRICAL VESTIBULAR NERVE STIMULATION PRIOR TO SLEEP ONSET**

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Previous studies have shown that the vestibular system influences sleep, and also that non-invasive electrical vestibular stimulation (VeNS) during sleep significantly improves insomnia severity index (ISI) score.<sup>1</sup> Whilst the individual mechanisms

leading to these changes were previously not fully understood, it was generally accepted that sleep was promoted secondary to the non-specific sensation of a rocking motion. Thus, the approach of delivering VeNS during sleep was an effort to replicate this.

Recent experiments, however, have identified prominent vestibular pathways that project into multiple sleep-regulating nuclei of the brainstem and hypothalamus, and have also generated compelling evidence to suggest that the vestibular system directly influences circadian regulation.

Therefore, we hypothesise that repeated electrical vestibular stimulation, when delivered prior to sleep onset, will improve ISI scores.

In this study, 20 adult participants who were identified as having mild to moderate insomnia, were given daily sessions of 30 minutes electrical vestibular stimulation for a period of 14 days. These sessions were delivered approximately 1-hour prior to sleep onset. Baseline ISI was established prior to the study, with repeat ISI scores measured on day 14.

Mean baseline ISI was calculated as 15.7 (moderate insomnia). Repeat ISI score, after 14 days of VeNS sessions, was calculated at 8.15 (sub-clinical insomnia). This result was statistically significant ( $p$ -value is  $<0.00001$ ).

This pilot study supports our hypothesis and suggests that VeNS may hold potential as a non-pharmaceutical therapy in the management of mild to moderate insomnia.

We propose that the mechanism of action is more complex than that of a non-specific rocking motion and may be secondary to the direct influence that the vestibular system has on the circadian pacemaker and other sleep-regulating nuclei in the brainstem.

**REFERENCE**

1. Zhang, Hongwei. 'Therapeutic effectiveness and patient acceptance of a vestibular nerve activation intervention in chronic insomnia' (2010).

**P051** **PREDICTING DIAGNOSIS OF OBSTRUCTIVE SLEEP HYPOPNEA-APNEA SYNDROME IN CHILDREN WITH ASTHMA: AN ALTERNATIVE TO CARDIORESPIRATORY POLYGRAPHY**

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**Introduction** Both asthma and obstructive sleep hypopnea-apnea syndrome (OSAHS) can cause nocturnal hypoxemia and breathing difficulty. Prevalence of OSAHS in children with asthma is reported as 63%; incidence in our cohort of severe therapy resistant asthma is only 9%, postulated to be due to good adherence to anti-inflammatory medications. Due to limited availability of level 2 studies and the volume of referrals received for asthmatic children we planned to identify whether reported symptoms and/or oxygen desaturation index (ODI) alone could accurately diagnosis OSAHS in these patients.

**Methods** Retrospective review of cardiorespiratory polygraphies with transcutaneous CO<sub>2</sub> monitoring that were performed in tertiary paediatric respiratory centre in children with a primary diagnosis of recurrent wheeze or asthma between January 2018 and May 2019. Clinical data including anthropometry, sleep symptoms and all sleep study parameters