Welcome to the latest issue of Sleep Medicine Research Review.

In this issue we report a study of gender differences in OSA that suggests we should be using female-specific questionnaires to reduce the underdiagnosis of OSA in women. We also report that OSA might be a cause of nocturia in younger patients, and present a US discussion on the problem of drowsy driving. The course and impact of post-stroke insomnia in young stroke survivors is evaluated, and a thorough review of SIDS is well worth a read.

We hope you find these and the other selected studies interesting, and welcome your feedback.

Kind regards,

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Gender differences in clinical and polysomnographic features of obstructive sleep apnea

Authors: Basoglu O & Tasbakan M

Summary: This study evaluated clinical and polysomnographic features of OSA in female patients. Differences in demographic, clinical, and polysomnographic parameters were compared between 2052 male and 775 female patients. Female OSA patients were older (mean 56.1 vs 50.4 years; p<0.0001) and had higher body mass index (36.3 vs 31.8 kg/m²; p<0.0001) than male patients, whereas men had a significantly higher waist-to-hip ratio and neck circumference. Hypertension, diabetes, thyroid disease, and asthma were more common in females (p<0.0001). Nocturnal choking, morning headache, fatigue, insomnia symptoms, impaired memory, mood disturbance, reflux, nocturia, and enuresis were also more common in women (p<0.0001), but men reported more witnessed apnoea (p<0.0001). Indicators of OSA severity, including AHI and oxygen desaturation index were lower in women.

Comment (AN): This research highlights some of the many differences in how OSA presents in women who do not necessarily manifest the characteristic symptoms of OSA. Symptoms not necessarily indicative of OSA but of insomnia or lower mood were higher in women than men. The higher use of insomnia/psychotropic medication is also important. Current screening questionnaires in New Zealand are likely to disadvantage women leading to delays in diagnosis. Heightened clinical suspicion for OSA in women is needed especially those with insomnia.

Reference: Sleep Breath 2017; published online Feb 14

Abstract

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**Obstructive sleep apnea syndrome should be considered as a cause of nocturia in younger patients without other voiding symptoms**

**Authors:** Maeda T et al.

**Summary:** This study evaluated the prevalence of nocturia among patients with OSA syndrome (OSAS) and the effect of continuous positive airway pressure (CPAP) treatment. 138 men with moderate-to-severe OSAS were assessed using polysomnography. Nocturia was defined as ≥2 night-time urinations. Patients were classified into Group A (<50 years old with nocturia), Group B (>50 years old with nocturia), and Group C (no nocturia). Patients with nocturia had more severe OSAS than those without nocturia (AHI: 52.0 vs 44.7; p=0.021). Group A had the worst AHI, but did not have more voiding symptoms than Group B. The number of urinations was significantly correlated with OSAS severity in patients <50 years old. CPAP decreased the frequency of nocturia in 85% of patients with nocturia and was most effective in patients with severe AHI.

**Comment (AN):** To pee or not to pee? The impact of nocturia and enuresis on quality of life in OSA is underappreciated. In this study CPAP decreased nocturia in 85% of patients and was most effective in those with severe OSAS.

**Reference:** Can Urol Assoc J 2016;10(7-8):E241-E245

**Asleep at the wheel – the road to addressing drowsy driving**

**Authors:** Higgins J et al.

**Summary:** Drowsy driving causes thousands of deaths and injuries in the US each year, despite being a controllable factor for drivers. This article discussed some of the conclusions made at a recent US meeting of sleep experts and highway safety professionals that addressed drowsy driving. The steps the community has already taken and plans to take in the future to bring an end to drowsy driving were also discussed.

**Comment (AN):** Professional bodies continue to highlight the huge economic and health impact of drowsiness on driving. In New Zealand, a report issued by the Ministry of Transport in 2016 identified fatigue as a contributing factor in 15% of fatal and 6% of injury crashes with a total social cost of crashes involving driver fatigue of about $NZ363 million; this is about 10% of the social cost associated with all injury crashes.

**Reference:** Sleep 2017; published online 25 Jan

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**The combination of supplemental oxygen and a hypnotic markedly improves obstructive sleep apnea in patients with a mild to moderate upper airway collapsibility**

**Authors:** Edwards B et al.

**Summary:** This single-blind study investigated the use of oxygen plus eszopiclone in patients with OSA. 20 patients with OSA received combination therapy (eszopiclone 3mg and 40% oxygen) or placebo/sham air in a crossover design a week apart. Under each condition, the effects on OSA severity (clinical polysomnography) and the phenotypic traits causing OSA were assessed. Compared with the control arm, combination therapy reduced the AHI (51.9 vs 29.5 events/h; p<0.001), and lowered both the ventilation associated with arousal (5.7 vs 5.2 L/min; p=0.05) and loop gain (3.3 vs 2.2; p=0.025). Nine of 20 patients were considered to be responders to therapy (AHI index reduced by >50% to below 15 events/h). Compared with nonresponders, responders had less severe OSA, a less collapsible upper airway and greater upper airway muscle effectiveness.

**Comment (AN):** Physiological trait identification in OSA, particularly the identification of those who have non-anatomical causes, is a clinically rational way of determining treatment. In this study, researchers used a combination of a mild sedative (eszopiclone) to raise arousal threshold and oxygen to lower loop gain in carefully selected patients and demonstrated improvement in OSA indices. Great paper but needs further research to determine clinical effectiveness and a standardised method for trait classification.

**Reference:** Sleep 2016;39(11):1973-83

**Epidemiology of sleep and sleep disorders in the Netherlands**

**Author:** Kerkhof G

**Summary:** This study assessed prevalence rates and characteristics of sleep and sleep disorders in the Netherlands. In 2012, a nationally representative sample of 2089 adults responded to a set of 48 questions, including the Holland Sleep Disorders Questionnaire (a validated questionnaire based on the International Classification of Sleep Disorders). Analysis of the responses showed a prevalence rate of 32.1% for a general sleep disturbance, 43.2% for insufficient sleep, 8.2% for insomnia and 5.3% for circadian rhythm sleep disorder. In addition, 8.1% of respondents had experienced parasomnia, 5.9% had hypersomnolence, 12.5% had restless legs disorder and limb movements during sleep, and 7.1% had sleep-related breathing disorder. 12.2% reported two or more concurrent sleep disorders.

**Comment (AN):** With all of this sleep disturbance it’s hard to explain why the Netherlands has ranked in the top 6 countries for overall happiness in a recent United Nations report, 2 places ahead of New Zealand. Perhaps it has better access to health services to treat these disorders?

**Reference:** Sleep Med 2017 Feb;30:229-39

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**Independent commentary by Associate Professor Alister Neill**

Alister Neill is Associate Professor at the Department of Medicine, University of Otago, Wellington School of Medicine; and Respiratory and Sleep Physician at the Department of Respiratory Medicine, Capital and Coast Health. His research interests include the epidemiology and ethnic distribution of obstructive sleep apnoea in New Zealanders and its relationship to cardiovascular disease, new treatment technologies, sleep assessment pathways and the provision of home non-invasive ventilation for respiratory failure. He directs the University of Otago’s WeltSleep Laboratory and Research Group and is an Associated Investigator of the Australasian Sleep Trials Network.

**Disclaimer:** This publication is not intended as a replacement for regular medical education but to assist in the process. The reviews are a summarised interpretation of the published study and reflect the opinion of the writer rather than those of the research group or scientific journal. It is suggested readers review the full trial data before forming a final conclusion on its merits.

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Comparing the effects of music and exercise with music for older adults with insomnia

Authors: Huang C et al.

Summary: This crossover study compared the effects of a soothing music intervention at bedtime with those of a brisk walking exercise (plus music) in the evening, on sleep quality in sedentary older adults with chronic insomnia. 38 adults aged 50–75 years with insomnia were randomised to a music intervention/brisk walking sequence or a brisk walking/music intervention sequence. Each participant completed the 2 intervention sessions a week apart. Each intervention lasted 30 min. Both interventions had beneficial effects on subjective sleep quality. Listening to soothing music before bedtime significantly shortened the wake time after sleep onset compared with brisk walking in the evening.

Comment (AN): Music to my ears … this study compared an insomnia intervention that should help (soothing music) with one that theoretically might make it worse (brisk evening walk). So I will be advising an early evening walk, followed by soothing music and good levels of morning light to my elderly insomnia patients – a lot safer than traditional hypnotics!


Abstract

The course and impact of poststroke insomnia in stroke survivors aged 18 to 65 years: results of the POISE study

Authors: Glozier N et al.

Summary: The POISE study evaluated the course and impact of post-stroke insomnia in young stroke survivors. 441 consecutive stroke survivors aged 18–65 years were recruited from 20 public hospitals in the New South Wales Stroke Service network. Participants were assessed by self-report and interview at 28 days, 6 months, and 12 months after stroke. The prevalence of insomnia at each time point in the year after stroke ranged from 30–37% and was more common in females. 16% of all participants reported “chronic” insomnia, with symptoms at both baseline and 6 months. At 12 months, patients with chronic insomnia were more likely to be depressed (odds ratio, 6.75), anxious (3.31), disabled (3.60), and/or have returned to work compared with those without insomnia.

Comment (KF): This prospective study showed insomnia symptoms are common and chronic in young stroke survivors. It also showed 75% of those with chronic insomnia post-stroke had depression and/or anxiety at 12 months. It was unfortunate that insomnia was screened using questions that did not include specifically asking about overnight awakenings so anyone with this problem alone wouldn’t be associated with suicidal ideation. The take home message is that insomnia is a treatable condition which influences life post-stroke.

Reference: Cerebrovasc Dis Extra 2017;7:9-20

Abstract

Independent commentary by Dr Karen Falloon

Dr Karen Falloon completed her medical training at the University of Auckland Medical School in 2001. She became a fellow of the Royal New Zealand College of General Practitioners in 2009. In 2014 Karen completed her PhD in General Practice for which she investigated the effectiveness of a behavioural treatment for insomnia. She works as a GP, specialising in insomnia and as a senior lecturer in the Department of General Practice and Primary Health Care at the University of Auckland. Karen is a member of the Australasian Sleep Association and serves on the GP education subcommittee.

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Cognitive behavioral insomnia therapy for those with insomnia and depression

Authors: Carney CE et al.

Summary: This study investigated the efficacy of CBT-I combined with antidepressant medication in patients with insomnia and depression, compared with treatments that target solely depression or insomnia. 107 participants with major depressive disorder and insomnia were randomised to 1 of 3 groups: antidepressant (escitalopram) + CBT-I (4 sessions); placebo + CBT-I; or antidepressant + 4 sessions of sleep hygiene control. All groups improved from baseline to week 2 for subjective sleep efficiency (SE) and total wake time (TWT); no significant between-group differences were observed. Objective sleep was measured at baseline and week 2 using overnight polysomnographic monitoring. Analyses showed that both of the CBT-I groups improved for TWT (p=0.03) but antidepressant + sleep hygiene control group worsened. All groups improved significantly from baseline to week 2 on the Hamilton Rating Scale for Depression.

Comment (KF): CBT-I is effective for improvement of sleep and also appears to have an antidepressant effect. What we now need is an effective version of CBT-I that can be delivered in primary care so that it is available to all patients with major depressive disorder and insomnia. In the meantime, appreciating that specific insomnia management may be required in patients with depression is important.

Reference: Sleep 2017; published online Feb 11

Abstract

Risk factors, protective factors and current recommendations to reduce sudden infant death syndrome

Authors: Carlin R & Moon R

Summary: This review discussed the risk factors and protective factors for SIDS. The cause of SIDS is believed to be multifactorial. It occurs in infants with underlying biological vulnerability who are exposed to exogenous risk during a critical developmental period. Known risk factors for SIDS include bed sharing, prone/side sleeping, soft bedding or other inappropriate sleep surfaces, exposure to tobacco smoke, and prematurity. Genetic and physiological evidence suggests that an infant's impaired arousal responses to hypercarbia and hypoxia may ultimately lead to asphyxia. Known protective factors include breastfeeding, room sharing, pacifier use and immunisations.

Comment (KF): This is well worth a read for a review into SIDS and the potential underlying mechanisms associated with the various risk factors. Of interest: studies have found the risk of side positioning to be similar to the risk of prone positioning, and the use of soft bedding (including positioners) was associated with a 5-fold increase in SIDS independent of sleep position. Also of note: if babies are in slings it is recommended that the infant's head remains outside the sling and visible to parents as a precaution against suffocation. Dummy (pacifier) use at sleep onset is protective (interestingly, even if the dummy falls out after the baby falls asleep).


Abstract

Somnambulism: emergency department admissions due to sleepwalking-related trauma

Authors: Sauter T et al.

Summary: This Swiss study investigated the epidemiology and trauma patterns associated with somnambulism. 11 patients who presented to an emergency department with trauma associated with somnambulism were included. The leading cause of admission was falls. Four patients were admitted for orthopaedic injuries that needed further diagnostic testing and treatment; 2 of these patients had multiple injuries. Two patients had a history of known rapid eye movement parasomnias.

Comment (KF): In a patient presenting with a fall of unknown origin consider sleepwalking among the differential diagnosis. Those who sleepwalk can occasionally hurt themselves, usually from a fall (bed, stairs, window). Although there were only a small number of sleepwalking trauma patients in this study, a couple had major injuries. The patient will have complete amnesia for the event so history from the patient and family/housemates is important.


Abstract

Clinical Practice Guideline for the pharmacologic treatment of chronic insomnia in adults

Authors: Sateia M et al.

Summary: The American Academy of Sleep Medicine commissioned a task force of 4 experts in sleep medicine to develop the American Academy of Sleep Medicine Clinical Practice Guideline. The purpose of the guideline was to establish clinical practice recommendations for the pharmacological treatment of chronic insomnia in adults, based on the findings of randomised controlled trials. It included drugs that are FDA-approved for the treatment of insomnia, as well as several that are commonly used to treat insomnia but are not FDA-approved for the indication.

Comment (KF): Whilst useful, these guidelines show that good quality data relating to pharmacological treatment of insomnia are sorely limited. Unfortunately, zopiclone is not assessed (eszopiclone is). A useful base guideline, but I found more to give weight to the argument of why not to prescribe certain agents than to inspire confidence into the efficacy and safety of others.


Abstract