

Journal Scan

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Acta Otorhinolaryngol Ital. 2009 Oct;29(5):255-8.

The correlation between tonsil size and academic performance is not a direct one, but the results of various factors

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Chronic upper airway obstruction most often occurs when both tonsils and adenoid are enlarged but may occur when either is enlarged. Obstructive sleep syndrome in young children has been reported to be associated with an adverse effect on learning and academic performance. The aim of this study was to evaluate the effect of relative size of the tonsil on academic performance in 4th grade school children. In 320 children, physical examination to determine the size of tonsils was performed by the otorhinolaryngologist. A questionnaire was developed to assess sleep patterns and problems, and socio-demographic data for the student participants. Furthermore, their school performance was assessed using their grade in mathematics, science, reading, spelling, and handwriting. No association between tonsil size and academic performance was found. Snoring frequency, body mass index and body weight showed a positive relation with tonsil size. There was no association between tonsil size and sleepiness during the day, sleeping habits, hyperactivity, enuresis, history of tonsillectomy in children and parental cigarette smoking and education. In conclusion, this study did not show any significant relationship between tonsil size and academic performance in 4th grade students. Further

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studies are recommended with a larger sample size, cognitive exams for evaluation of attention, and follow-up of the students until high school, when the discrepancy of the students' academic performance is more obvious.

Am J Lifestyle Med. 2009 Jul 1;3(1 suppl):55s-59s.

Sleep Disturbances and their Relationship to Cardiovascular Disease

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Sleep disturbances are a common problem with chronic insomnia occurring in 10% of the general adult population and obstructive sleep apnea present in 4% and 2% of middle-aged men and women respectively. In addition, Americans are sleeping fewer hours per night than they did 20 years ago. There is now increasing evidence that reductions and increases in sleep duration, and various sleep disorders including obstructive sleep apnea and insomnia may be causal factors in the development of cardiovascular disease. Some of the evidence linking disturbances of sleep with cardiovascular disease is described in this review.

Int J Otolaryngol. 2009;2009:396523.

Efficacy of a conservative weight loss program in the long-term management of chronic upper airway obstruction

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OBJECTIVE: Obesity is a significant contributor to oxygen demand and dynamic airway obstruction. The

objective of the current study is to determine the long-term success of conservative measures directed toward weight reduction on airway management without respect to specific airway disease etiology. **Methods.** Patients with chronic airway obstruction secondary anatomic lesions or obstructive sleep apnea were recruited and followed prospectively. Demographics, initial and final weights, diagnosis, and followup information were recorded. Patients were referred to a registered dietician, provided counseling, and started on a weight-loss regimen. Outcome measures were change in body mass index (BMI) and rate of decannulation from weight loss alone. **Results.** Of fourteen patients, ten remained tracheostomy-dependent and four had high-grade lesions with the potential for improvement in oxygen demand and dynamic airway collapse with weight loss. The mean follow up period was 25 months. The mean change in BMI was an increase of 1.4 kg/m(2) per patient. **Conclusions.** Conservative measures alone were not effective in achieving weight reduction in the population studied. This may be due to comorbid disease and poor compliance. The promise of decannulation was an insufficient independent motivator for weight loss in this study. Although the theoretical benefits of weight loss support its continued recommendation, the long-term success rate of conservative measures is low. More aggressive facilitated interventions including pharmacotherapy or bariatric surgery should be considered early in the course of treating airway disease complicated by obesity.

Prim Care Companion J Clin Psychiatry. 2009;11(6):330-8.

Recognizing and managing obstructive sleep apnea in primary care.

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OBJECTIVE: This review aims to impart information regarding recognition of obstructive sleep apnea (OSA) and associated excessive sleepiness (ES) in the primary care setting in order to provide optimal care to patients

with this common but serious condition. This review will also discuss the prevalence and treatment of depression in patients with OSA.

DATA SOURCES: A MEDLINE search of articles published between 1990 and 2008 was conducted using the search terms obstructive sleep apnea AND excessive sleepiness, obstructive sleep apnea AND depression, and obstructive sleep apnea AND primary care. Searches were limited to articles in English concerned with adult patients.

STUDY SELECTION: In total, 239 articles were identified. Articles concerning other sleep disorders and forms of apnea were excluded. The reference lists of identified articles were searched manually to find additional articles of interest.

DATA SYNTHESIS: Primary care physicians can aid in the diagnosis of OSA and associated ES by being vigilant for lifestyle and physical risk factors associated with this condition. In addition, primary care physicians should maintain a high level of clinical suspicion when presented with illnesses that are commonly comorbid with OSA, such as psychiatric disorders and depression, in particular. Conversely, assessment of patients with OSA for common comorbidities may also improve a patient's prognosis and quality of life.

CONCLUSIONS: Primary care physicians play a vital role in recognizing OSA and ES. These clinicians are crucial in supporting their patients during treatment by ensuring that they have clear, concise information regarding available therapies and the correct application and maintenance of prescribed devices.

Postgrad Med J. 2009 Dec;85(1010):693-8.

Systemic inflammation: a key factor in the pathogenesis of cardiovascular complications in obstructive sleep apnoea syndrome ?

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Obstructive sleep apnoea syndrome (OSAS) is a highly prevalent disease and is recognised as a major public health burden. Large-scale epidemiological studies have demonstrated an independent relationship between

OSAS and various cardiovascular disorders. The pathogenesis of cardiovascular complications in OSAS is not completely understood but a multifactorial aetiology is likely. Inflammatory processes have emerged as critical in the pathogenesis of atherosclerosis at all stages of atheroma formation. Increased levels of various circulating markers of inflammation including tumour necrosis factor alpha (TNF α), interleukin 6 (IL6), IL-8 and C-reactive protein (CRP) have been reported as associated with future cardiovascular risk. There is increasing evidence of elevated inflammatory markers in OSAS with a significant fall after effective treatment with continuous positive airway pressure. This evidence is particularly strong for TNF α , whereas studies on IL6 and CRP have yielded conflicting results possibly due to the confounding effects of obesity. Cell culture and animal studies have significantly contributed to our understanding of the underlying mechanisms of the association between OSAS and inflammation. Intermittent hypoxia, the hallmark of OSAS, results in activation of pro-inflammatory transcription factors such as nuclear factor kappa B (NF-kappaB) and activator protein (AP)-1. These promote activation of various inflammatory cells, particularly lymphocytes and monocytes, with the downstream consequence of expression of pro-inflammatory mediators that may lead to endothelial dysfunction. This review provides a critical analysis of the current evidence for an association between OSAS, inflammation and cardiovascular disease, discusses basic mechanisms that may be responsible for this association and proposes future research possibilities.

Eur J Paediatr Dent. 2009 Dec;10(4):181-4.

Craniofacial morphology in preschool children with obstructive sleep apnoea syndrome.

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AIM: Obstructive sleep apnoea syndrome (OSAS) is a common problem in children. It is characterised by a combination of partial airway obstruction associated with hypoxemia and hypoventilation and intermittent

obstructive apnoea, which disrupts normal ventilation and sleep. The aim of the study was to evaluate the craniofacial features of preschool children with polysomnographic diagnosis of OSAS, using measurements from standardized lateral cephalograms according to the floating norms cephalometric analysis.

MATERIALS AND METHODS: 21 untreated caucasian children (mean age of 4.57 +/-0.6) with complete deciduous dentition were included in this study. All the subjects had diagnosis of OSAS with a positive RDI. Pretreatment cephalometric radiographs were evaluated. Statistical method Descriptive statistics includes mean and standard deviation of the cephalometric variables.

CONCLUSION: The present study showed that OSAS preschool children showed a skeletal Class II pattern with retrognathic mandible and increased skeletal divergency.

Indian J Chest Dis Allied Sci. 2009 Oct-Dec;51(4):217-24.

Oxidative stress and obstructive sleep apnoea syndrome.

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RATIONALE: Even though oxidative stress has been proposed as an underlying mechanism for the symptoms in patients with obstructive sleep apnoea syndrome (OSAS), little information is available on the effects of anti-oxidant treatment on their improvement.

OBJECTIVES: To observe the effects of anti-oxidant treatment on polysomnographic parameters and oxidative stress markers in OSAS patients.

METHODS: Polysomnography (PSG) was performed on 20 male patients. They were administered continuous positive airway pressure (CPAP) therapy for two nights followed by oral intake of vitamin C (100 mg BD) [DOSAGE ERROR CORRECTED] and vitamin E (400 IU BD) for 45 days and a repeat PSG was done. Ten healthy normal subjects underwent the same protocol excepting the CPAP therapy.

RESULTS: In OSAS patients, plasma lipid peroxidation increased significantly and whole blood reduced

glutathione decreased significantly. The CPAP therapy as well as anti-oxidant treatment reduced the lipid peroxidation and restored the reduced glutathione concentrations. After anti-oxidant intake, OSAS patients slept better with decrease in Epworth sleepiness score and the number of apnoeic episodes. They spent more time in stages 3 and 4 of sleep. The optimum pressure of CPAP device was significantly lowered also. CONCLUSIONS: Oxidative stress contributes to sleep behaviour in OSAS patients, and anti-oxidant intake improves the quality of sleep in them.

Acta Clin Croat. 2009 Sep;48(3):295-8.

The association of obesity and cerebrovascular disease in young adults—a pilot study

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Obesity has been recognized as an isolated risk factor for stroke. In obese patients, other risk factors for stroke such as hypertension, hyperlipidemia, ischemic heart disease and obstructive sleep apnea are more frequently present. The aim of this study was to assess the presence of obesity among other risk factors for stroke in younger adult patients with ischemic stroke. It was a pilot study performed in ischemic stroke patients aged 18-55. In addition to the routine diagnostic work-up, body height, weight and waist circumference were measured in study patients. The study included 50 patients, 23 female and 27 male. The mean age of male patients was 39.8 +/- 10.5 and of female patients 41.6 +/- 7.7 years. In control group The mean waist circumference was 94.9 +/- 5.8 cm in the control group and 102.6 +/- 9.8 cm in the male stroke group. There was no significant difference in waist circumference between the control and patient female groups and in body mass index among all groups. In younger males, waist circumference could be considered as an important risk factor for stroke.

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Practitioner. 2009 Nov;253(1723):17-20, 2.

Obstructive sleep apnoea increases risk of CVD

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In OSA, the patient suffers repeated episodes of apnoea caused by narrowing or closure of the pharyngeal airway during sleep. The degree of closure of the airway leads to periods of either apnoea (complete) or hypopnoea (partial) obstruction. Population-based surveys estimate that 2-4% of the middle-aged population have OSA, which is similar to the prevalence of diabetes and asthma. Although understanding of the condition has improved considerably, it is estimated that 85-90% of sufferers still remain undiagnosed. OSA is not only a cause of excessive daytime somnolence leading to an increased risk of accidents on the road and poor work performance, but also a major cause of social dysfunction, reduced quality of life related to poor health, and mood disorders. Untreated OSA predicts a substantially increased risk of hypertension, cardiovascular disease, cerebrovascular disease, depression, and mortality. Wherever OSA is considered, the following questions should be asked: Is this patient falling asleep regularly against their will? Is this patient often sleepy while driving? Is this patient experiencing difficulty at work because of excessive sleepiness? Is sleep refreshing? Is surgery for snoring being considered (OSA should be excluded first)? The gold standard for investigation of OSA is polysomnography. It is possible to diagnose almost 90% of OSA patients from limited sleep studies often conducted on a domiciliary basis with portable diagnostic equipment.

J Perioper Pract. 2009 Nov;19(11):395-9.

Not just a patient that snores. Obstructive sleep apnoea: the perioperative concerns through the eye of the anaesthetist

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Obstructive sleep apnoea (OSA) has life threatening

perioperative cardiorespiratory implications. As patients present to hospital for incidental surgery unaware of their condition, perioperative practitioners need a thorough knowledge of OSA to allow optimisation before theatre. Elective cases should be delayed for investigation and treatment if OSA is suspected. In theatre cardiorespiratory problems should be managed by a senior anaesthetist and a perioperative team alert to the risk of post-operative hypoxia.

Sleep. 2009 Dec 1;32(12):1589-92.

Obstructive sleep apnea and aldosterone

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BACKGROUND: Obstructive sleep apnea (OSA) is a major risk factor for hypertension and has been associated with increased risk for cardiovascular morbidity. A dysregulated renin-angiotensin-aldosterone system may contribute to excess sodium retention and hypertension and may be activated in OSA. We tested the hypothesis that serum levels of aldosterone and plasma renin activity (PRA) are increased by apneic sleep in subjects without cardiovascular disease, compared to healthy control subjects.

METHODS AND RESULTS: Plasma aldosterone level was measured in 21 subjects with moderate to severe OSA and was compared to 19 closely matched healthy subjects. Plasma renin activity (PRA) was measured in 19 OSA patients and in 20 healthy controls. Aldosterone and PRA were measured before sleep (9 pm), after 5 hrs of untreated OSA (2 am) and in the morning after awakening (6 am). There were no baseline (9pm) differences in serum aldosterone levels and PRA between the healthy controls and OSA patients (aldosterone: 55.2 +/- 9 vs 56.0 +/- 9 pg/mL; PRA: 0.99 +/- 0.15 vs. 1.15 +/- 0.15 ng/mL/hr). Neither several hours of untreated severe OSA nor CPAP treatment affected aldosterone levels and PRA in OSA patients. Diurnal variation of both aldosterone and PRA was observed in both groups, in that morning renin and aldosterone levels were higher than those measured at night before sleep.

CONCLUSIONS: Our study shows that patients with moderate to severe OSA without co-existing cardiovascular disease have plasma aldosterone and renin levels similar to healthy subjects. Neither untreated OSA nor CPAP treatment acutely affect plasma aldosterone or renin levels.

Sleep. 2009 Dec 1;32(12):1579-87.

Abdominal compression increases upper airway collapsibility during sleep in obese male obstructive sleep apnea patients

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STUDY OBJECTIVES: Abdominal obesity, particularly common in centrally obese males, may have a negative impact on upper airway (UA) function during sleep. For example, cranial displacement of the diaphragm with raised intra-abdominal pressure may reduce axial tension exerted on the UA by intrathoracic structures and increase UA collapsibility during sleep.

DESIGN: This study aimed to examine the effect of abdominal compression on UA function during sleep in obese male obstructive sleep apnea patients.

SETTING: Participants slept in a sound-insulated room with physiologic measurements controlled from an adjacent room.

PARTICIPANTS: Fifteen obese (body mass index: 34.5 +/- 1.1 kg/m²) male obstructive sleep apnea patients (apnea-hypopnea index: 58.1 +/- 6.8 events/h) aged 50 +/- 2.6 years participated.

INTERVENTIONS: Gastric (PGA) and transdiaphragmatic pressures (P(DI)), UA closing pressure (UACP), UA airflow resistance (R(UA)), and changes in end-expiratory lung volume (EELV) were determined during stable stage 2 sleep with and without abdominal compression, achieved via inflation of a pneumatic cuff placed around the abdomen. UACP was assessed during brief mask occlusions.

MEASUREMENTS AND RESULTS: Abdominal compression significantly decreased EELV by 0.53 +/- 0.24 L (P=0.045) and increased PGA (16.2 +/- 0.8 versus 10.8 +/- 0.7 cm H₂O, P < 0.001), P(DI) (11.7 +/- 0.9 versus 7.6 +/- 1.2 cm H₂O, P < 0.001) and UACP (1.4 +/- 0.8 versus 0.9 +/- 0.9 cm H₂O, P = 0.039) but not R(UA)(6.5 +/- 1.4 versus 6.9 +/- 1.4 cm H₂O x L/s, P=0.585).

CONCLUSIONS: Abdominal compression negatively impacts on UA collapsibility during sleep and this effect may help explain strong associations between central obesity and obstructive sleep apnea.

J Atheroscler Thromb. 2009;16(6):862-9. Epub 2009 Dec 22.

Effects of obstructive sleep apnea with intermittent hypoxia on platelet aggregability

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AIM: Obstructive sleep apnea (OSA) is a risk factor for cardiovascular diseases. Platelets play key roles in the development of atherothrombosis. Several studies assessing platelet activation in patients with OSA have been published; however, there have been only a few studies with a small number of patients with OSA investigating platelet aggregability, which evaluates platelet aggregation more directly than the platelet activation status. We aimed to investigate the effects of OSA and nasal continuous positive airway pressure (nCPAP) therapy, a well-established treatment for OSA, on platelet aggregability.

METHODS AND RESULTS: We examined 124 consecutive patients with snoring in whom the 3% oxygen desaturation index (3%ODI), a severity marker of OSA, and ADP- and collagen-induced platelet aggregability measured with the optical aggregometer were analyzed. ADP-induced platelet aggregability was increased more in patients with moderate-to-severe OSA (3%ODI>15) than in patients with non-to-mild OSA (p=0.029). In multiple linear models, 3%ODI significantly contributed

to increased platelet aggregability induced by both ADP and collagen among 59 subjects with one or more risk factors for vascular diseases, such as smoking, hypertension, diabetes mellitus or hyperlipidemia. In 23 patients treated by nCPAP, collagen-induced platelet aggregability was ameliorated on Day 90, compared to at the baseline. **CONCLUSION:** The severity of OSA significantly contributed to platelet aggregability, which was improved by nCPAP treatment partially at three months.

J Hum Hypertens. 2009 Dec 17.

Spironolactone reduces severity of obstructive sleep apnoea in patients with resistant hypertension: a preliminary report

Gaddam K, Pimenta E, Thomas SJ, Cofield SS, Oparil S, Harding SM, Calhoun DA.

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Obstructive sleep apnoea (OSA) and hyperaldosteronism are very common in subjects with resistant hypertension. We hypothesized that aldosterone-mediated chronic fluid retention may influence OSA severity in patients with resistant hypertension. We tested this in an open-label evaluation by assessing the changes in the severity of OSA in patients with resistant hypertension after treatment with spironolactone. Subjects with resistant hypertension (clinical blood pressure (BP) \geq 140/90 mm Hg on \geq 3 antihypertensive medications, including a thiazide diuretic and OSA (defined as an apnoea-hypopnoea index (AHI) \geq 15) had full diagnostic, polysomnography before and 8 weeks after spironolactone (25-50 mg a day) was added to their ongoing antihypertensive therapy. In all, 12 patients (mean age 56 years and body mass index 36.8 kg m⁻²) were evaluated. After treatment with spironolactone, the AHI (39.8 \pm 19.5 vs 22.0 \pm 6.8 events/h; P<0.05) and hypoxic index (13.6 \pm 10.8 vs 6.7 \pm 6.6 events/h; P<0.05), weight and clinic and ambulatory BP were significantly reduced. Plasma renin activity (PRA) and serum creatinine were significantly higher. This study provides preliminary evidence that treatment with a mineralocorticoid receptor antagonist substantially reduces the severity of OSA. If confirmed in a

randomized assessment, it will support aldosterone-mediated chronic fluid retention as an important mediator of OSA severity in patients with resistant hypertension.

Br J Anaesth. 2009 Dec;103 Suppl 1:i23-30.

Obesity, obstructive sleep apnoea, and diabetes mellitus: anaesthetic implications

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Obesity is an epidemic in much of the Western World.

The extent of this problem, combined with the increasing preference for ambulatory surgical procedures, has produced a difficult situation for many anaesthesiologists. Even the simplest anaesthetic procedures can become very complicated and potentially difficult in this population. Although there are numerous complications associated with obesity, perhaps obstructive sleep apnoea (OSA) and diabetes mellitus are among the more significant. Patients with OSA are often not ideal candidates for certain day-care procedures, but many outpatient procedures can be performed on patients with OSA as long as attention is paid to anaesthetic technique. Diabetic patients are prone to numerous complications in the perioperative period, including cardiac problems, but with careful management, they are able to undergo day-care surgical procedures safely.