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RETROSPECTIVE OBSERVATIONAL STUDY OF OBSTRUCTIVE SLEEP APNOEA IN WOMEN IN NORTHERN TERRITORY AUSTRALIA

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Background and Aims: We aim to identify the characteristics of female patient with obstructive sleep apnoea in Northern Territory Australia in both indigenous and non-indigenous women

Methods: This retrospective study included total of 306 women, both indigenous and non-indigenous Australian, who underwent diagnostic sleep study for suspected obstructive sleep apnoea at the Darwin Respiratory and Sleep Health from January to December 2015. All subjects underwent anthropometric measurements (height, weight, BMI, neck circumference), questionnaire for risk assessment of OSA (hypertension, heart disease, diabetes mellitus, depression, use of anti-depressants, smoking and alcohol use) and Epworth Sleepiness Score before the diagnostic sleep study. We used American Academy of Sleep Medicine guideline for severity assessment of OSA.

Results: A total of 306 women underwent sleep study; diagnosis of obstructive sleep apnoea was made in 102 (33%), which comprise 21 indigenous women (20%) and 81 non-indigenous women (80%). Severe daytime sleepiness with ESS more than 9 was reported by 56% of OSA diagnosed women. The mean age of all women who were diagnosed with sleep apnoea was 52 (min = 21.1, max = 80.1, SD = 13.3), comprising mean age 46.9 (min = 21.1, max = 75, SD = 13.9) for indigenous and 54 (min = 42, max = 79, SD = 14.6) for non-indigenous. Mean BMI of all OSA patients was 37. For indigenous patients with OSA, mean BMI is 37 and that of non-indigenous cohort was 36. Mean neck circumference of indigenous OSA patients was 42 cm whilst that of non-indigenous women was 38.8 cm. Mean AHI of all OSA patients was 37 (min = 4.8, max = 140, SD = 25.6). Indigenous women scored higher mean AHI 42.2 (min = 12.1, max = 130) compared to mean AHI 36.3 (min = 4.8, max = 140) of non-indigenous women.

Conclusion: Although lower proportion of indigenous women are diagnosed with obstructive sleep apnoea, the disease is more severe in them, associated with higher BMI and thicker neck circumference.

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THE USE OF CONTINUOUS PULSE OXIMETRY IN THE DIAGNOSIS OF DEVENTILATION SYNDROME IN A CASE OF KYPHOSCOLIOSIS WITH CHRONIC VENTILATORY FAILURE WEILING LIM^{1*}, GEAK POH TAN¹

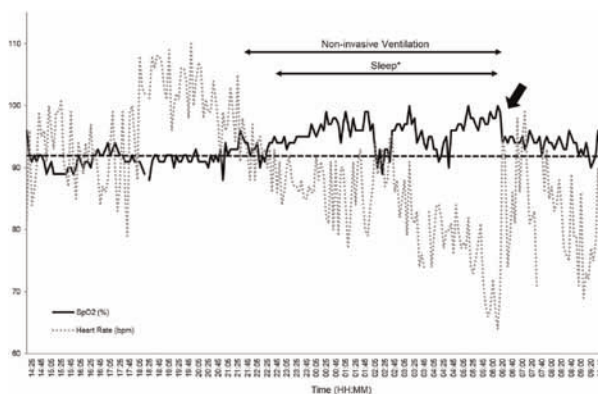
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Background and Aims: Deventilation dyspnoea (DD) following cessation of nocturnal non-invasive ventilation (NIV) has been described in individuals with severely impaired lung function. However, the pathophysiology is less well-understood and diagnosis is often challenging.

Methods: We describe the use of a wireless wearable ward-based continuous pulse oximetry and vital signs monitoring device (ViSi Mobile System, Sotera Wireless) in a case of DD.

Results: The patient was a frail elderly woman who presented with progressive dyspnoea. Significant past medical history included kyphoscoliosis with chronic hypercapnic respiratory failure on nocturnal NIV (6–7 h per night) for the 13 years preceding current admission. Clinical examination revealed kyphoscoliosis and signs of cor pulmonale. Chest imaging showed pulmonary infiltrates and bilateral pleural effusions consistent with fluid overload. This resolved with diuresis and pleural drainage. However, despite euolemia, persistent dyspnea was observed following removal of NIV in the morning. Continuous pulse oximetry revealed mean (standard deviation) oxygen saturation (SpO₂) of 95.7 (2.3)% and 92.4 (2.1)% during NIV and when off NIV respectively; the findings correlated with arterial blood gas analysis showing partial pressure of carbon dioxide (PaCO₂) 43 mmHg during NIV and hypercarbia (PaCO₂ 59) when off NIV. There was a sharp decline in SpO₂ during removal of NIV in the morning (see Figure - Arrow). Alveolar-arterial oxygen gradient was normal throughout, which suggested no significant parenchymal disease or ventilation-perfusion mismatch. We suspected a component of respiratory muscle weakness but the patient was too weak to perform pulmonary function testing. The duration of NIV usage was lengthened and a small dose of opiate was administered in the morning following removal of NIV, which led to symptomatic improvement.

Conclusion: DD can complicate advanced kyphoscoliosis. The use of a simple continuous SpO₂ monitoring device allows for indirect trending of PaCO₂ and assisted in the diagnosis of DD in this case.



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DYSPNEA IMPROVEMENT IN PATIENTS WITH LUNG DISEASES IN A SINGLE SESSION OF MINDFUL BREATHING: A RANDOMIZED CONTROLLED STUDY

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Background and Aims: Mindful breathing has been practised in recent decades and there is a lack of study for it as a non-pharmacological method in improving dyspnea. This study was to assess the efficacy of mindful breathing in improvement of dyspnea score, oxygen saturation and respiratory rate in patients with lung diseases.

Methods: Sixty three inward patients, diagnosed with lung cancer, acute exacerbation of bronchial asthma (AEBa) or acute exacerbation of chronic obstructive pulmonary disease (AECOPD), were recruited and assigned randomly into intervention and control groups. They reported their dyspnea score according to Modified Borg Dyspnea scale while oxygen saturation and respiratory rate were measured. The parameters were assessed at baseline, at 5 mins and at 20 mins.

Results: Mindful breathing significantly reduced the dyspnea score among all patients in 5 min (OR = 12.886, 95% CI = 3.588, 46.282, $P < 0.001$) and 20 minutes (OR = 5.378, 95% CI = 1.832, 15.790, $P = 0.002$), oxygen saturation in 5 min (OR = 4.050, 95% CI = 1.137, 14.432, $P = 0.025$) and respiratory rate in 20 min (OR = 3.069, 95% CI = 1.094, 8.613, $P = 0.031$).

Significant early dyspnea score reduction was observed in 5 min in mindful breathing group among patients with lung cancer. ($P = 0.041$) In a subgroup of patients with AEBA, mindful breathing conferred significant sustained dyspnea reduction in 5 min ($P = 0.006$); in 20 min ($P = 0.003$) and early oxygen saturation in 5 min ($P = 0.039$). In mindful breathing group among patients with AECOPD, a significant reduction in dyspnea score was observed in 5 minute ($P = 0.034$) while delayed respiratory rate improvement was demonstrated in 20 min ($P = 0.035$).

Conclusion: Mindful breathing is a quick, easy and useful therapy and has a significant effect in dyspnea reduction among patients with lung diseases. Further studies with a larger sample size are recommended to discover more potential effects of mindful breathing in the subgroups of patients.

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TREATMENT EMERGENT SLEEP APNEA: A CASE REPORT

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Background and Aims: While obstructive sleep apnoea is effectively treated with continuous positive airway pressure (CPAP), roughly 10% of initial CPAP titrations result in emergence of central apnoea's or hypopneas, a phenomenon referred to as treatment-emergent central sleep apnoea (CSA). Although the majority of treatment-emergent CSA resolves with ongoing CPAP therapy, some patients exhibit persistent CSA, creating a therapeutic challenge.

Methods: A 32-year-old male, sought consult due to morning headaches and poor concentration which affects his work. Associated symptoms were snoring, witnessed apnoea, daytime sleepiness, and easy fatigability. Past medical history and family history were unremarkable. Sleep history revealed that patient has sudden awakening with intense anxiety, awakens with headache, with back pain and with heartburn, has difficulty waking up in the morning, and has trouble falling asleep. Epworth sleepiness scale is 19. BMI is 38 kg/m² and neck circumference is 18 inches. Chest findings were unremarkable. STOP BANG score was 6/8. Echocardiogram and arterial blood gas were normal.

Results: On diagnostic polysomnogram, respiratory disturbance index (RDI) was noted to be 101.3 events/h, with 77% obstructive apnoeas, 13% central apnoeas and 10% hypopneas. Central apnoea index was 13.1. Lowest oxygen saturation was 89%. During the CPAP titration study, central apnoea index increased to 57.2. The patient then underwent a repeat therapeutic polysomnogram since the ending pressures of the first titration study failed to normalize the RDI. On repeat titration study, at bi-level positive airway pressure (PAP) with pressures of IPAP 13, EPAP 5, back up rate of 12, there was resolution of the central apnoea events.

Conclusion: Management of treatment-emergent CSA is controversial, and treatment recommendations are derived from clinical experience, small observational studies, and a limited number of small randomized trials. For this case, titration with bi-level PAP was helpful in relieving the central apnoea events.

Respiratory Structure and Function 1

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NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD) AND RESPIRATORY FUNCTIONS

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Background and Aims: Since their ethiopathology and results shown similarities, the relationship suggested between the NAFLD and the impaired respiratory functions are shown for the first time by obtaining liver biopsy in this study.

Methods: 94 non-smoking patients 58♀, 36♂ who had NAFLD whose Activity Score (NAS) calculated for all patient after the biopsy. The control group 28♀&17♂out of 45 whose respiratory function test results (FEV1&FVC) received by spirometry.

Results: Biopsy results evaluated, steathosis degree and NAS score were negatively correlated with FEV1($r = -0.22$, $P = 0.033$ & $r = -0.363$, $P < 0.01$) & FVC($r = -0.271$, $P = 0.08$ & $r = -0.414$, $P < 0.01$), no correlation with lobuler inflammation, aneurism, fibrosis. FEV1, FVC in all patients negative correlation with insulin resistance $r = -0.363$, $P < 0.001$ & $r = -0.602$, $P < 0.001$. 14 patients (14.8%) restrictive respiratory disease (FEV1/FVC \geq 70 & FVC $<$ % 80).Two groups as non-alcoholic steatohepatitis (NASH) ($n:57$) and non-NASH ($n:37$), a significant difference found regarding insulin resistance, waist/hip circumference ratio, FEV1, FVC values.

Between groups FEV1/FVC ratio had no significant difference, restrictive pattern value (10.8% vs17.5 $P = 0.37$).

In NAFLD group, insulin resistance seen to be significant as an independent predictor factor ($P < 0.001$).

Conclusion: Patients with NAFLD, a restrictive respiratory disease seen relatively as a frequent co-morbidity; insulin resistance on these two organs is regarded as a probable mechanism.

As their ethiopathology and results shown similarities, the relationship suggested between the NAFLD and the impaired respiratory functions are shown for the first time by obtaining liver biopsy in this study.

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THE WEIGHT LOSS THERAPY IMPROVED RESPIRATORY FUNCTION AND RESPIRATORY SYSTEM IMPEDANCE IN OBESE SUBJECTS

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Background and Aims: Obesity is known to have significant effects on pulmonary function. One of those features is forced oscillation technique (FOT) properties, so that higher respiratory system resistance (Rrs) and more negative reactance (Xrs) compared to subjects with normal body weight have been reported. In this study, effects of weight loss therapy on Rrs, Xrs, and other relevant parameters were examined.

Methods: R5 (Rrs at 5 Hz), R20, and X5 were assessed before and after weight loss therapy including exercise and diet for 4 weeks in 40 obese patients (M/F = 23/17, Age: 40. \pm 3.5 years) using a commercialized FOT apparatus. With tidal quiet breathing through the mouth