Methods: This was a retrospective study. We reviewed patient charts of patients with OSA (diagnosed as AHI of > 5) who underwent polysomnography for CPAP titration at our center and recorded the prescribed CPAP pressures. Other data including age, BMI, were also tabulated. Majority of patients were scheduled to undergo bariatric surgery.
Results: A total of 97 charts were analyzed - 59 females and 38 males. The two groups - male and female - were well matched in terms of age (43.97 +/- 13.1 vs 40.52 +/- 9.6; p = 0.164). The BMI was lower in the males compared to the females (42.1 +/- 10.9 vs. 48.4 +/- 11.32; p = 0.014). The AHI in both groups was not statistically different (m - 47.7 +/- 35 vs f - 38.4 +/- 40.3; p = 0.24). Values for daytime sleepiness as assessed by Epworth sleepiness scale was also similar (11.5 +/- 4.8 vs. 11.6 +/- 5.5; p = 0.469). Males were seen to need significantly higher CPAP pressures than females (mean pressure 13.02 +/- 3.49 vs. 10.08 +/- 2.1 respectively; p < 0.0005).
Conclusion: For similar severity of OSA, despite lower values for BMI, males were seen to need higher mean CPAP pressures compared to females. This study serves to reinforce the signifcant influence of gender on upper airway collapsibility and highlights an important clinical relevance.
Support (optional): None

0619

EPISODIC HYPOXIA ELEVATES THE HYPOCAPNIC APNEIC THRESHOLD DURING NON RAPID EYE MOVEMENT SLEEP

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Introduction: Episodic hypoxia is followed by increased ventilatory motor output referred to as long-term facilitation (LTF). The present study was designed to determine whether episodic hypoxia (EH) influences the susceptibility to develop hypocapnic central apnea, ascertained from the $P_{ET}CO_2$ that demarcates the hypocapnic/apneic threshold (HAT) during NREM sleep.
Methods: We studied 9 healthy subjects during stable NREM sleep (6 females and 3 males, age 26.4 ± 1.4 years, BMI 22.3 ± 0.7 kg/m^2). The subjects underwent mechanical ventilation (MV) to determine the HAT. Thereafter, they were exposed to isocapnic EH. The EH protocol was comprised of 15 1-minute episodes of isocapnic hypoxia, separated by 1-minute recovery periods. The mean oxygen saturation achieved was 86.9±0.6%. Ten minutes after EH, the HAT was again determined. EEG, minute ventilation(VE) and supraglottic pressure were measured. HAT was defined as the measured $P_{ET}CO_2$ at which a central apnea closest to the last hypopnea occurred. The $\Delta P_{ET}CO_2$-AT was the change in $P_{ET}CO_2$ between control and the HAT. The ventilatory response was calculated by dividing ΔVE (eupneic V_E –hypopneic V_E) by $\Delta P_{ET}CO_2$.
Results: Results are mean±SEM. The eupneic $P_{ET}CO_2$ declined significantly from pre-hypoxia to post-hypoxia(39.5±1.04 to 38.4±0.24 mm Hg, p=0.002, indicating decreased plant gain), while ΔPETCO2-AT was reduced from -3.3±1.6 to -2.7±1.2 mmHg (p=0.04). Ve increased significantly in the recovery period (6.3±0.3 to 6.6±0.3 L/min, p=0.02).The slope of the ventilatory response was higher in the post-hypoxic recovery period compared to the pre-hypoxic period (1.77±0.30 vs. 3.96±0.96 L/min/mm Hg, p=0.051), indicating increased controller gain.
Conclusion: Following hypoxia, the ventilatory sensitivity to CO_2 below eupnea was increased and $\Delta P_{ET}CO_2$ was reduced significantly below control despite a significant reduction in eupneic $P_{ET}CO_2$ in the recovery period. This indicates that episodic hypoxia may play a destabilizing role by increasing controller gain despite decreasing plant gain.
Support (optional): Department of Veterans Affairs and NHLBI

0620

SCREENING FOR SLEEP DISORDERS IN NORTH AMERICAN POLICE OFFICERS

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Introduction: Sleep disorders are common, costly, and treatable, but often remain undiagnosed and untreated. Unrecognized sleep disorders adversely affect personal health and may lead to chronic sleep loss, which in turn increases the risk of accidents and injuries. These problems are exacerbated in shift workers, who may experience chronic sleep loss due to their work schedules and also show a high incidence of sleep disorders. The present study sought to examine the incidence of major sleep disorders in a sample of North American police officers.
Methods: Police officers (n=4,471) completed a self-report survey that included screening for obstructive sleep apnea (OSA) alone or for OSA and all of the following: insomnia, restless leg syndrome (RLS), shift work sleep disorder (SWSD), and narcolepsy with cataplexy. Validated screening questionnaires were used for all sleep disorders except for SWSD. For SWSD, the screening questions were based on the International Classification of Sleep Disorders-II diagnostic criteria, but required participants show both insomnia and excessive sleepiness that are temporally associated with a recurring work schedule that overlaps the usual sleep time. Participants were recruited through invitation letters to law enforcement agencies and through visits to police stations during which an education session about sleep and health was presented to officers. Participants who screened positive for one or more sleep disorder were referred to a sleep clinic for formal evaluation. The evaluation was verified in a subset of participants.
Results: The percentage who screened positive for any sleep disorder was 38.4%. The percentages for each disorder were as follows: OSA 35.1%, insomnia 6.8%, RLS 0.7%, SWSD 2.0%, and narcolepsy 0.5%.
Conclusion: Based on these data, sleep disorders appear to be highly prevalent in the present sample of police officers. Sleep disorder screening and treatment programs may potentially improve police officer health, safety and productivity.
Support (optional): This study was supported by the National Institute of Justice (2004-FS-BX-001) and the Centers for Disease Control and Prevention (R01 OH008496).

0621

ACUTE EFFECTS OF INTERMITTENT HYPOXIA ON GLUCOSE METABOLISM IN NORMAL SUBJECTS

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Introduction: Sleep-disordered breathing (SDB) has been independently associated with impaired glucose metabolism and insulin resistance. Whether intermittent hypoxemia or sleep fragmentation are in the putative causal pathway linking SDB and altered glucose metabolism remains to be determined. To explicate the role hypoxia in SDB-related alterations in glucose homeostasis, the current study examined the acute metabolic effects of intermittent hypoxia in normal subjects.
Methods: Six non-smoking, non-obese, healthy young male volunteers

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