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Title: Adiposity but not severity of obstructive sleep-disordered breathing correlates with morning plasma TNF- α levels in Greek children

Dr. Vasiliki 7417 Theologi vilkat@hotmail.com MD ^{1,2}, Dr. Vasiliki 7425 Varlami bettyvarlami@hotmail.com MD ¹, Dr. Georgia 7426 Malakasioti gwgwm1979@yahoo.gr MD ¹, Dr. Irene 7430 Tsilioni irinitilioni@hotmail.com ¹, Dr. Konstantinos 7435 Chaidas konchaidas@yahoo.gr MD ¹, Dr. Emmanouel 7431 Alexopoulos ealexop@yahoo.com MD ¹, Dr. Athanasios 7418 Kaditis kaditia@hotmail.com MD ² and Prof. Dr Konstantinos 7419 Gourgoulisanis kgourg@med.uth.gr MD ¹. ¹ Sleep Disorders Laboratory, Larissa University Hospital, Larissa, Greece and ² First Department of Pediatrics, Pediatric Pulmonology Unit, University of Athens School of Medicine and Aghia Sophia Children's Hospital, Athens, Greece, 11527 .

Body: Background: Sleep-disordered breathing (SDB) has been associated with increased frequency of excessive daytime sleepiness (EDS). In adults, increased TNF- α plasma levels probably mediate this association, but conflicting results have been reported in children. We hypothesized that: i) the higher the severity of SDB in childhood, the higher the frequency of EDS and morning TNF- α plasma levels; ii) subjects with high TNF- α levels are more likely to have EDS. Methods: Children without and with snoring underwent polysomnography, EDS was determined by parental response to specific questions and TNF- α morning plasma levels were measured. Results: Children with moderate-to-severe SDB [n=24; 5.7 \pm 2 yo; apnea-hypopnea index (AHI) 6-23.5 episodes/hour), but not participants with mild SDB (n=22; 6 \pm 2.5 yo; AHI 1.1-4.7) were at significantly higher risk for EDS compared to controls without snoring (n=26; 6.2 \pm 2.3 yo; AHI 0.2-1) [OR (95% CI): 7 (1.6-30.9) and 3 (0.6-13.8), respectively]. The 3 groups did not differ regarding TNF- α levels (0.63 \pm 0.2 vs. 0.65 \pm 0.2 vs. 0.57 \pm 0.13 pg/mL; p>0.05). TNF- α levels were associated significantly with body mass index z-score (p<0.05), but not AHI or SpO₂ nadir (p>0.05). Subjects with high TNF- α levels (>0.57 pg/mL i.e. median in controls) were not at higher risk for EDS compared to those with low levels [OR (95% CI) adjusted for obesity: 1.9 (0.6-6.4)]. Conclusions: Increasing severity of SDB is related to increasing frequency of EDS but not with elevated TNF- α plasma concentrations which are positively correlated with the degree of adiposity. Children with high TNF- α levels are not at increased risk for EDS.