Title: Obstructive sleep apnea-related fatigue and serum testosterone

Body: Introduction: Fatigue is a common understudied symptom of obstructive sleep apnea (OSA). It has also been reported as a major symptom associated with low serum testosterone level in non-OSA patients. Aims and objectives: The aim of this study was to investigate in adult obese males affected by OSA, the relationship between fatigue and serum testosterone in order to identify among all measured parameters the predictors for OSA-related fatigue. Methods: Fifteen OSA patients and fifteen control subjects were enrolled in the study. Testosterone was determined in blood morning samples collected within one hour after awakening. Daytime sleepiness was assessed by the Epworth Sleepiness Scale and fatigue was evaluated with Multidimensional Fatigue Inventory. Statistical analysis included t-test, correlation, regressions and Kruskal-Wallis test followed by post-hoc analysis. Results: The results indicated that mean testosterone level was 3.55±0.7 ng/ml in OSA group and 4.26±1.1 ng/ml in controls (P=0.049). An inverse correlation was found between testosterone and fatigue scores (P<0.01). There was a statistically significant difference between the control group and the severe OSA subgroup for most of fatigue scores: general fatigue, physical fatigue, reduced activity, mental fatigue. However, no significant differences were found between controls and mild OSA (P>0.05). Among all variables, testosterone was the only independent significant predictor for physical fatigue (t=-2.56, P=0.033, R=0.978, R²=0.958) and reduced activity (t=-4.41, P=0.002, R=0.966, R²=0.934) in the OSA patients. Conclusions: The present study showed that OSA-related fatigue was strongly associated with serum testosterone, together with OSA severity.