European Respiratory Society
Annual Congress 2012

Abstract Number: 1938
Publication Number: P1073

Abstract Group: 7.1. Paediatric Respiratory Physiology
Keyword 1: Children **Keyword 2:** Sleep disorders **Keyword 3:** Biomarkers

Title: Evaluation of 8-isoprostane as a biomarker of oxidative stress in children with obstructive sleep apnea syndrome

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Body: Background: Hypoxia-reoxigenation, characteristic of obstructive sleep apnea syndrome (OSAS), induces an increase of products of non-enzymatic free radical-catalyzed lipidic peroxidation, such as 8-isoprostane (8IsoP). Aim: To evaluate urinary 8IsoP values in children with OSAS. Methods: Thirty-eight children with OSAS (mean age:6.23±2.08yr, range:3.16-10.83yr M/F:26/12), underwent urinary collection at the morning after nocturnal polysomnography. 8Isop levels were measured with an enzyme immunoassay and corrected by urinary creatinine (uCR) levels. Results: According to the AHI (Apnoea/Hypopnea index, cut off>5 events/hours of sleep) obtained from polysomnography, we found 20 subjects (Group 1) with snoring/minimum OSAS (mean AHI:1.48±1.44 ev/hr; mean overnight oxygen saturation, SaO2:97.64±0.63%) and 18 subjects (Group 2) with moderate/severe OSAS (mean AHI:11.98±7.97 ev/hr; mean SaO2:96.51±1.98%). Compared to Group 1, urinary 8IsoP value was higher in Group 2 (1.10±0.66ng/mg uCR vs 0.76±0.36ng/mg uCR. p=0.046) and age was lower (5.45±1.69yr vs 6.93±2.18yr. p=0.033). We found a negative correlation between SaO2 and urinary 8IsoP (r=-0.42; p=0.009) and a positive correlation between AHI and urinary 8IsoP (r=0.32; 0.05<p<0.1). Linear regression analysis, performed using as dependent variable values of urinary 8Isop and as independent variables age, AHI, SaO2, showed that SaO2 and age were predictors for levels of urinary 8Isop (R:0.530; RSquare:0.281). Conclusion: Our data show that values of urinary 8IsoP are related to OSAS severity and SaO2. Further studies are needed to assess usefulness of urinary 8Isop as a marker of inflammation likely due to oxidative stress.