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A novel method for evaluation of oxidative stress in children with OSA

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ABSTRACT

Objectives: To evaluate the role of adenotonsillar hypertrophy and the outcomes of adenotonsillectomy (AT) on oxidative stress for obstructive sleep apnea (OSA) in children using a new method; thiol/disulfide homeostasis.

Methods: The study is consisted of 45 children with OSA and 38 healthy control subjects with similar age and sex. Children 3–12 years of age with OSA, defined as having an apnea/hypopnea index (AHI) of 5 or more in an overnight polysomnography, underwent adenotonsillectomy. OSA was classified as mild ($1 \leq AHI<10$), moderate ($10 \leq AHI<20$) or severe ($AHI \geq 20$). Venous blood samples were taken preoperatively and one month after surgery. The blood levels of thiol/disulfide homeostasis were assessed and compared between patients and control group, before and after adenotonsillectomy.

Results: Body mass index (BMI), mean age and gender distribution were similar between the study and control groups. Statistically significant higher disulfide levels and ratios were found in the study group compared to the control group; in patients with moderate to severe OSA compared to mild OSA; in the preoperative period compared to postoperative period ($p < 0.001$, for all).

Conclusions: The current study provides preliminary evidence between oxidative stress and OSA in children with adenotonsillar. Adenotonsillectomy for OSA may result in a dramatic improvement in oxidative stress as measured by thiol/disulfide homeostasis.