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Effect of Adenotonsillectomy in Children with Sleep-Disordered Breathing

Alexandria, VA — Children may have a better quality of life (QOL) and diminished cardiovascular disease risk from the decreased endothelin 1 (ET-1) levels after adenotonsillectomy, according to new research published in the December 2011 issue of *Otolaryngology – Head and Neck Surgery*.

SDB is an increasingly common indication for tonsillectomy and adenoidectomy due to obstructive sleep apnea syndrome (OSAS). Cardiovascular (CV) disease frequently has been reported in patients with moderate to severe OSAS, related abnormalities include: systematic hypertension, pulmonary hypertension with cor pulmonale, left ventricular (LV) hypertrophy or dysfunction, cardiac arrhythmias, atherosclerosis, and coronary artery disease.

The study sample included an obstructive sleep apnea survey and a detailed personal and family history. All subjects underwent a complete otolaryngologic examination, otoscopy, and anterior rhinoscopy. Thirty-seven children with a diagnosis of upper airway obstruction caused by adenotonsillar hypertrophy (ATH) were included in the study. Twenty female and 17 male patients, between 3 and 13 years old participated in the study.

Surgical procedures included: 20 tonsillectomies and adenoidectomies (54%), 15 adenoidectomies only (40.6%), and 2 tonsillectomies only (5.4%). Study results show when comparing moderate and severe cases to mild cases according to Brouillette scores, ET-1 levels were significantly higher in moderate and severe cases ($P < .01$). There was a significant correlation between ET-1 and the OSA-18 survey scale ($r = 0.442$; $P = .001$).

The objective of the study was to evaluate the influence of adenotonsillectomy on the plasma concentration of ET-1 levels and C-reactive protein (CRP) in children with sleep-disordered breathing (SDB). The primary goal of this research study was to investigate the effect of ATH and adenotonsillectomy on the possible pathogenic mechanisms (endothelial dysfunction and inflammation) that lead to cardiovascular complications.

Based on the study findings, the authors indicate: "...that children with SDB who undergo adenotonsillectomy may have a better QOL, and the positive influence of adenotonsillectomy on CV

function might be mediated by the decrease in ET-1 levels.” The study’s authors acknowledge that more research is needed, noting: “Further studies with longer follow-up and a larger population sample are warranted to demonstrate the association between SDB due to ATH and ET-1 levels and to confirm the influence of adenotonsillectomy on ET-1 and CRP levels to prevent cardiovascular disease in children.”

Otolaryngology – Head and Neck Surgery is the official scientific journal of the American Academy of Otolaryngology – Head and Neck Surgery Foundation (AAO-HNSF). The study’s authors are Arzu Tatlipinar, Burak Cimen, Dursun Duman, Erkan Esen, Sema Koxsal and Tanju Gökçeer.

Reporters who wish to obtain a copy of the study, “Effect of Adenotonsillectomy on Endothelin-1 and C-Reactive Protein Levels in Children with Sleep-Disordered Breathing” should contact Mary Stewart at 1-703-535-3762, or newsroom@entnet.org.

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About the AAO-HNS

The American Academy of Otolaryngology – Head and Neck Surgery (www.entnet.org), one of the oldest medical associations in the nation, represents nearly 12,000 physicians and allied health professionals who specialize in the diagnosis and treatment of disorders of the ears, nose, throat, and related structures of the head and neck. The Academy serves its members by facilitating the advancement of the science and art of medicine related to otolaryngology and by representing the specialty in governmental and socioeconomic issues. The organization's vision: "Empowering otolaryngologist-head and neck surgeons to deliver the best patient care."