CLINICAL REPORT

Soft palate length and upper airway relationship in OSA and non-OSA subjects

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Introduction

One local airway factor proposed as causative agent of obstructive sleep apnea (OSA) is a long soft palate. One interesting study performed a longitudinal cephalometric imaging analysis of the morphological changes occurring in the pharynx between early and middle adult life (1). The study involved 16 young adults (mean age=20.2 years) who had cephalometric films taken and repeated across an interval of 32 years. Changes in soft palate and airway dimensions were examined and the results showed (1) the vertical oropharynx length increased by 4.7 mm after 20 years of age, (2) the anterioposterior dimension (AP) retropalatal airway size decreased with age, but (3) the retroglossal AP airway size stayed unchanged. Interestingly, they reported that the soft palate became longer

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Abstract

Background. The narrowest area of the airway between the posterior nasal opening and the epiglottis is usually located in the retro palatal area. Many consider this the most likely site of airway obstruction during an obstructive sleep apnea (OSA) event. The aim of this study was to investigate the differences in soft palate and airway length between OSA and non-OSA patients.

Methods. In this study, we analyzed the ratio of the soft palate and the upper airway length in 45 consecutive patients. Twenty-five had an Apnea–Hypoapnea Index of more than 5 events per hour and were classified in the OSA group (male, 19; female, 6). These patients were compared with 20 normal controls (male, 12; female, 8). Controls who complained of snoring did have sleep studies (n=5). The other fifteen controls were clinically asymptomatic and did not have sleep studies. Medical computed tomography scans were taken to determine the length of the upper airway and the soft palate length measured in the midsagittal image.

Results. Soft palate length was significantly larger in OSA patients compared to controls (p=0.009), and in men compared to women (p=0.002). However, there were no differences in airway length. The soft palate length, as a percent of oropharyngeal airway length, was significantly larger in OSA patients compared to controls (p=<0.0001) and in men compared to women (p=0.02). Soft palate length increases significantly with age by 0.3 mm per year in males (after adjustment for body mass index (BMI) and OSA). Soft palate length as a percent of airway length is larger in OSA patients and increases significantly with BMI in males only after adjusting for age.

Conclusion. In this study, OSA patients had a longer soft palate in proportion to their oropharyngeal airway compared to controls as well as men compared to women. This proportion could be used for identifying patients at risk for OSA in combination with age.

KEY WORDS: Soft palate length, oropharyngeal airway, obstructive sleep apnea, computerized tomography.

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