

## Evaluation of the relationship between pharyngeal fat pad and obstructive sleep apnea - a pilot feasibility report

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**Objective:** The pharyngeal fat pad seems to play an important role in the early stage of obstructive sleep apnea (OSA); however, the effects of different levels of the pharyngeal fat pad on the severity of OSA are still not fully understood. The aim of this study was to examine the fat pad area of various pharyngeal levels in OSA patients.

**Method:** Nine OSA patients (8 males and 1 female) prospectively underwent low-dose 320-detector row drug-induced sleep computed tomography (DI-SCT). The pharyngeal fat pad area at Eustachian tube (nasopharyngeal level), maxillary tuberosity (retropalatal level), mandibular foramen (oropharyngeal level), mandible angle (retroglossal level), and mental tubercle (hypopharyngeal levels) were estimated using Photoshop CS6 extended software. The fat pad area of various pharyngeal levels and their associations among demographic data, polysomnographic parameters, and DI-SCT-defined obstructive sites were explored.

**Results:** The median age of OSA patients was 39 years, the median body mass index (BMI) was 24.6 kg/m<sup>2</sup>, and the median apnea-hypopnea index (AHI) was 45.6/h. The nasopharyngeal fat pad area was inversely associated with age ( $r = -0.72$ ,  $P = 0.03$ ). The retropalatal fat pad area was significantly associated with BMI ( $r = 0.69$ ,  $P = 0.04$ ). The oropharyngeal fat pad area was significantly associated with BMI ( $r = 0.68$ ,  $P = 0.04$ ) and AHI ( $r = 0.78$ ,  $P = 0.01$ ). The retroglossal fat pad area was inversely associated with multiple obstruction sites ( $r = -0.77$ ,  $P = 0.02$ ). The hypopharyngeal fat pad area was significantly associated with tonsil size ( $r = 0.89$ ,  $P = 0.002$ ) and AHI ( $r = 0.72$ ,  $P = 0.03$ ).

**Conclusion:** This pilot study provides preliminary evidence of feasibility of studying pharyngeal fat pad by DI-SCT using a commercial image processing software, and support that pharyngeal fat pad may involve in the development of OSA. The clinical usefulness of pharyngeal fat pad reduction for treating OSA deserves further scrutiny.

中文題目：評估咽部脂肪墊與阻塞性睡眠呼吸中止症的關聯性——一個先驅可行性報告

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