Karolinska Institutet

**Institutionen för klinisk vetenskap, intervention och teknik, Enheten för öron-, näs- och halssjukdomar**

# Pharyngeal surgery and epidemiology in sleep apnea

AKADEMISK AVHANDLING
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**Abstract**

Obstructive sleep apnea syndrome (OSAS) occurs frequently among adults and children. The first-line treatments in adults are continuous positive airway pressure (CPAP) or mandibular retaining devices (MRDs), but the long-term efficacy is only around 60%. Uvulopalatopharyngoplasty (UPPP) has been criticized for lack of efficacy and a high degree of complications. In children the first-line treatment is adenotonsillectomy.

This thesis evaluates two major aspects of OSAS: firstly, UPPP in adult OSAS patients with failing CPAP and MRD treatment regarding efficacy, safety, satisfaction and side effects in Papers I and II. Secondly, the relationship between sleep disordered breathing (SDB) in children and adolescents, defined as first hospital diagnoses of OSAS, tonsillar and adenotonsillar hypertrophy (ATH), and parental diagnoses of OSAS, occupation and family socioeconomic status (SES) in Papers III and IV.

In paper I, we measured changes in numbers of oxygen desaturations 4% ($ODI_4$) with home based sleep apnea registrations and daytime sleepiness with validated questionnaires (Epworth sleepiness scale, ESS), as well as complication and satisfaction rate, before and 1 year after UPPP in 158 patients. There was a significant decrease in the $ODI_4$ from median 23 (range 6-100) to 8 (range 0-60). The criteria of success (50% reduction and ODI<20), was 64% and UPPP reduced the nightly respiratory disturbances to a mean of 60 %. The ESS value decreased significantly from median 12 (range 0-21) to 6 (0-22). Four of 158 patients (2.5%) had serious postoperative complications, 88% of the patients were satisfied and there was no mortality.

In Paper II, a pilot study without previous power calculation, 47 of the patients in Paper I answered a questionnaire before and one year after UPPP, as well as 15 non-snoring controls. The median score of the patients was unchanged from 5 (range 0–17) to 5 (0–19), compared to 1 (0–3) for controls.

In Paper III we estimated the standardized incidence ratio (SIR) of hospitalization, 1997–2007, for OSAS and SDB caused by ATH in children (aged 0–18 years) with a parent affected by OSAS and compared this risk with that of children with OSAS and SDB without a parent affected by OSAS. We used the MigMed2 database which includes the Swedish Hospital Discharge Register. After accounting for SES, age, and geographic region, the SIRs of OSAS in boys and girls with a parent affected by OSAS were 3.09 (95% CI 1.83–4.90) and 4.46 (95% CI 2.68–6.98), respectively. The SIRs of ATH in boys and girls with a parent affected by OSAS were 1.82 (95% CI 1.54–2.14) and 1.56 (95% CI 1.30–1.87), respectively.

In Paper IV we analyzed the odds ratio (OR) in individuals aged 0–18 years, 1997–2007, for first hospital diagnoses of OSAS and ATH by family SES and parental occupation. The MigMed2 database was linked to the Swedish census. There were a total of 34 933 children with a first hospital diagnosis of OSAS and ATH. The ORs were increased in individuals with low family SES, defined as family income and maternal education. Increased ORs were found among 14 maternal and 13 paternal occupational groups. Decreased ORs were found for 10 paternal occupational groups. In paper III and IV there was no data available for individual risk factors and confounders such as BMI or passive smoking.

In summary, UPPP reduced the nightly respiratory disturbances to a mean of 60%, halved the daytime sleepiness, did not change the median scores of pharyngeal disturbances, and may be a safe alternative in selected OSAS patients.

Swedish children with a parent affected by OSAS had a significantly higher risk of hospitalization for OSAS and SDB defined as ATH. Children with a low family SES and in some occupational groups were associated with an increased OR for hospitalization for OSAS and SDB.

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