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Danish Centre for Evaluation and Health Technology Assessment

Diagnosis and treatment of obstructive sleep apnoea

A health technology assessment - summary

Danish Health Technology Assessment - grant funded projects 2006; 6 (5)

2 English summary

Obstructive obstructive sleep apnea (OSA) is characterized by intermittent respiratory arrests during sleep with disturb sleep pattern and is associated with daytime symptoms, reduced quality of life, social- and traffic consequences, cardiovascular, pulmonary and neurological complications. Obstructive sleep apnoea is common, under diagnosed and treated in Denmark. The diagnostic quality varies significantly. Obstructive sleep apnoea is hereby related to social and health economical consequences.

This health technology assessment (HTA) focuses on obstructive sleep apnea without severe co-morbidity. The HTA includes a systematic review of the literature and different studies including: 1) a controlled study of the difference between fixed pressure continuous positive airway pressure (CPAP) and auto-adjusted CPAP, 2) a study of the influence of CPAP on quality of life, 3) a study of the morbidity before and after CPAP treatment, and 4) a questionnaire study of the diagnosis and treatment of obstructive sleep apnea in Denmark involving all relevant clinics and hospitals. Furthermore a health economical analysis of diagnosis and treatment has been performed.

Obstructive sleep apnoea is diagnosed by different methods. In-hospital supervised polysomnography is the gold-standard and probably present the best diagnostic sensitivity and specificity, partial respiratory polygraphy present a moderate-good diagnostic sensitivity and specificity, whereas the sensitivity and specificity of oximetri is poor.

The best documented treatment is CPAP. Auto-adjusted CPAP is as effective as fixed pressure CPAP. Auto-adjusted CPAP may involve some advantages as compared to fixed pressure CPAP: manual titration is eliminated and follow-up adjustments and controls are probably reduced. Other treatment modalities include dental devices, which however is less effective than CPAP. Weight reduction and increased physical activity is potential of benefit, but no controlled studies have addressed this aspect. There is limited evidence that soft palate reducing surgery is effective in treating obstructive sleep apnea. The procedure is associated with increased morbidity and complications and is not recommended as a primary treatment for obstructive sleep apnea. Currently no medical treatment is effective for the treatment of obstructive sleep apnea.

CPAP treatments in patients with obstructive sleep apnoea increase quality of life and reduce morbidity. Treatment is cost effective due to the reduction in morbidity. A further positive effect of CPAP treatment is expected if social and traffic consequences are also included.

In order to evaluate organization aspect, three scenarios for the diagnosis of obstructive sleep apnea are evaluated: 1) in-hospital supervised polysomnography, 2) ambulatory partial respiratory polygraphy and 3) ambulatory oximetri. In the analysis the cost, the sensitivities and specificities of each diagnostic procedure, the numbers of obstructive sleep apnea patients identified by the screening procedure, potential effect on morbidity of CPAP treatment, CPAP-compliance and follow-up were included in the analysis.

This analysis showed that in-hospital supervised polysomnography was the most expensive methods. The costs for ambulatory respiratory polygraphy and oximetri were similar. Despite partial respiratory present lower diagnostic yield than in-hospital supervised polysomnography in the diagnosis of uncomplicated obstructive sleep apnea, implementation of respiratory polygraphy will imply that more patients can be diagnosed and treated, than if supervised polysomnography is used, for the same economical resources. The disadvantages are that some patients are misdiagnosed and not treated. Respiratory polygraphy and oximetry only evaluate sleep apnea and other sleep disorders are not diagnosed by these methods, which however need a polysomnography. Ambulatory oximetri offers no diagnostic or health economical advantages and cannot be recommended for the primary diagnosis. The enquete study showed that obostructive sleep apnoea is severily underdiagnosed and

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under treated. In practice it is not possible to establish a sufficient number of polysomnography beds for the diagnosis of uncomplicated obstructive sleep apnea, which will need a significant number of beds and staff. Therefore, seen from a patient-ethical point of view, ambulatory partial polygraphy and auto-adjusted CPAP is preferable in the diagnose and treatment of uncomplicated obstructive sleep apnea. A health related economical analysis indicates that diagnosing and CPAP treatment of obstructive sleep apnea is cost-effective, even if only morbidity-data are included. Future health related economical analysis should include social, professional and traffic aspects.

It is important to focus on the quality of submissions, visitation and other evaluation of patients with obstructive sleep apnea. Patients with uncomplicated obstructive sleep apnea may be treated in accredited hospital departments and clinics with special competence and training. CPAP is a chronic treatment and relevant organization of follow-up should be present. A significant proportion of patients with obstructive sleep apnea presents major co-morbidity like neurological, cardiac or pulmonary diseases or suffers from other sleep related breathing disorder. Patients with other sleep disorders like narcolepsy, motor or behaviour disorders during sleep or nocturnal seizures may share some similar symptoms to sleep apnea. These patients need a much more extensive evaluation on full accredited sleep laboratories with extensive diagnostic and treatment procedures, presence of relevant neurological and medical specialities with relevant education of medical and non-medical staff. Seen from an organization point of view a limited number of such high-level clinics should be established in hospital with relevant specialities and co-diagnostic ressources.

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