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Home Diagnosis of Obstructive Sleep Apnea in Children

Summary

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SUMMARY

HOME DIAGNOSIS OF OBSTRUCTIVE SLEEP APNEA IN CHILDREN

According to an American study, 2 to 3% of children have obstructive sleep apnea (OSA), a condition characterized by upper airway obstruction during sleep. Its main health impacts are neurocognitive deficits, behavioural disorders, growth retardation, and pulmonary and systemic hypertension.

In a report of an investigation into the death of a young child following complications of an adenotonsillectomy, the coroner looked at the need to carry out a diagnostic exploration of OSA in children with respiratory obstruction due to tonsillar hypertrophy and, more specifically, at the diagnostic performance of portable devices that can be used at home. It was in this context that he asked the Agence d'évaluation des technologies et des modes d'intervention en santé (AETMIS), now the Institut national d'excellence en santé et en services sociaux (INESSS), to evaluate the home diagnostic modalities that could serve as possible alternatives to laboratory polysomnography (PSG) testing for adults and children with obstructive sleep apnea.

This report is a systematic review of the efficacy of portable devices for diagnosing OSA in children compared to that of the reference standard test, laboratory PSG. This report also presents an overview of the current situation in Québec based on consultations with a number of experts. Several databases, such as MEDLINE by PubMed, The Cochrane Library and EMBASE, were queried. The six studies that were selected examined the issue of using portable devices in children. Their objective was to evaluate the diagnostic performance of portable devices that measure cardiorespiratory parameters and blood oxygen saturation (oximetry) and of audiotape and videotape recording devices for the direct observation of sleep.

On the whole, we find that the diagnostic performance of portable devices for investigating OSA varies according to the study and the type of device used. The varying quality of the studies and the small number of subjects included could explain the heterogeneity of the results. The predictive value of cardiorespiratory devices and that of oximetry in diagnosing OSA in children were demonstrated in half of the studies.

One study showed that oximetry can help confirm the condition but not rule it out. Consequently, PSG should be considered if the oximetry result is negative. It was shown that videotaping can be used to rule out OSA but not to confirm it, while audiotaping was inconclusive. In the studies that demonstrated the efficacy of portable devices, we noted that they were better able to detect moderate to severe apnea than mild apnea. The available data were, however, insufficient to draw any conclusions regarding the use of portable devices as alternatives to PSG. The clinical practice guidelines concur with this and recommend the use of PSG but not that of portable cardiorespiratory devices. Despite its low negative predictive value, oximetry is presented as a last resort for detecting the most urgent cases and determining the priority of access to PSG.

In Québec, the patient intake capacity of sleep laboratories is limited and the offer of service at university hospitals varies from region to region. The experts consulted estimated a wait time of 4 months to 1½ years for complete laboratory polysomnography for a child. As a result, oximetry is often used as a first-line option for detecting OSA or as a selective means of determining the priority of access to PSG. The experts consulted brought up the need to ensure the regular maintenance and replacement of oximetry devices, which are used mainly in the regions (outside of hospitals with a sleep laboratory), and to improve the sleep laboratories' patient intake capacity by increasing human and physical resources.

INESSS concludes that presently, none of the portable devices for the home diagnosis of OSA can be considered an alternative to the reference standard test, polysomnography, but in terms of overcoming the difficulty in accessing laboratory PSG, nocturnal oximetry is the best alternative for the initial evaluation for detecting the most severe cases.