Management of paediatric obstructive sleep apnoea: A systematic review and network meta-analysis

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Abstract

Background: Obstructive sleep apnoea (OSA) affects many children, and adenotonsillar hypertrophy is the most common cause of paediatric OSA.

Aim: Despite the growing treatment options, there is no comprehensive comparison of all interventions. We aimed to compare and rank the effectiveness of various treatments in a network meta-analysis.

Design: Literature was searched from inception to 13 May 2018 for paediatric OSA with adenotonsillar hypertrophy. The outcomes were the changes in apnoea-hypopnea index (AHI), oxyhaemoglobin desaturation index (ODI), and lowest arterial oxygen saturation (SaO_2). Frequentist approach to network meta-analysis was used. Treatment hierarchy was summarized according to the surfaces under the cumulative ranking curves.

Results: Fourteen trials comprising 1064 paediatric OSA participants evaluating ten interventions (adenotonsillectomy, adenotonsillectomy + pharyngoplasty, adenotonsillotomy, antimicrobial therapy, steroids, leukotriene receptor antagonists [LTRAs], steroids + LTRAs, rapid maxillary expansion [RME], placebo, and no treatment) were identified for network meta-analysis. In terms of effectiveness in AHI reduction, surgical approach was still the most effective intervention than no treatment. RME was one of the most effective interventions to improve lowest SaO_2. No comparisons showed statistical significance in reducing ODI.

Conclusions: Irrespective of the intervention used, complete resolution of OSA was not achieved in most trials.

Keywords: child; meta-analysis; obstructive sleep apnoea; rapid maxillary expansion.