Effectiveness of intranasal dexmedetomidine in pediatric procedural sedation: A systematic review and meta-analysis

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Objective: To evaluate the effectiveness of intranasal dexmedetomidine as a sole sedative during pediatric procedural sedation.

Design: Systematic review and meta-analysis.

Data Sources: Pubmed, Scopus, ClinicalTrials.gov, Sciencedirect, Cochrane Library were searched until March 2018.

Eligibility criteria for selected studies: We included all randomized, controlled trials comparing intranasal dexmedetomidine with another sedative or placebo during procedural sedation among pediatric patients. Trials studying intranasal dexmedetomidine as a premedication before anesthesia were not included.

Data synthesis: Primary outcome was the success of the planned procedure with intranasal dexmedetomidine without any other sedatives.

Results: 7 randomized controlled trials were analyzed. 3 trials compared dexmedetomidine to midazolam and 4 trials studied the difference between dexmedetomidine and chloral hydrate. Dexmedetomidine treated children had higher incidence of successful procedure compared to midazolam RD 0,31 (95% CI = 0,17 to 0,46). The success of the procedure did not significantly differ between dexmedetomidine and chloral hydrate RD 0,10 (95% CI = -0,03 to 0,22). Parental satisfaction, the incidence of hypotension, bradycardia or vomiting did not differ between treatment arms.

Conclusion: Intranasal dexmedetomidine is more effective in providing successful sedation than midazolam when used as sole sedative during pediatric procedures. There was a trend favoring intranasal dexmedetomidine compared to chloral hydrate in the success of procedures. The incidence of vomiting or hemodynamic adverse events did not differ between dexmedetomidine and midazolam or chloral hydrate in this study. More studies are needed to evaluate the efficacy and safety of intranasal dexmedetomidine sedation in pediatric patients.

A: Chloral hydrate

B: Midazolam