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THEME: AUDITORY OBJECTIVE MEASURES

Intranasal Dexmedetomidine for sedation in ABR testing in children

Ana Giordano[a], Brigitte Lehner[a], Anca Voicu[a], Dominique Donzeau[b], Aline Joulie[b], Luc Froissant[b], Eric Fontas[b], Sonanda Bailleux[a]

a *Department of Pediatric Otolaryngology-Head and Neck Surgery, Hôpitaux Pédiatrique de Nice, CHU-Lenval, Nice, France*
b *Department of Clinical Research and Innovation, Centre Hospitalier Universitaire de Nice, Université Côte d'Azur, Nice, France*

Introduction

ABR represents the gold standard for objective hearing evaluation in children [1]. This exam needs to be performed during sleep, or with a very high level of steadiness, which is frequently difficult to achieve, leading in some cases to general anesthesia. Dexmedetomidine is a sedative drug, with an α 2-agonist action. It provides relatively fast onset of sleep and sedative properties paralleling natural sleep, with a strong safety profile. [2]. The intranasal administration avoids the discomfort of oral, intravenous or intrarectal administration, being unpainful and easy to perform, especially in non-cooperative children. The aim of our study was to evaluate the safety and efficacy of intranasal dexmedetomidine in ABR testing in children as a single sedative agent, and its sedation features.

Material and Methods

We conducted a prospective, non randomized, non controlled study in our centre, between July 2018 and November 2021. Patients aged from 1 to 15 years, who needed ABR testing under sedation were included. The child, accompanied by one or both parents was placed in the dedicated room in the ENT outpatient's clinic of our hospital. They were monitored with cardiorespiratory monitoring and blood pressure cuff, and an emergency cart was placed near the patient. An on-call anesthesiologist was available if needed. Based on a review of the available literature [3-5] we decided to administer an initial dose of 2.5 µg/kg dexmedetomidine in one of the child's nostrils, using an atomizer device (MAD nasal, Fig.1). A second dose of 1 µg/kg was administered 30 min later if sedation was incomplete. We considered a failure of sedation if ABR was unable to be completed 90 min after the administration of the second dose. Once the ABR test was completed, we monitored the patient for 2 h, starting at the time of the first intranasal administration. The patient was then stimulated and evaluated with the Aldrete score. The patient was discharged when completely awake. The day after we made a phone call to the parents to detect any adverse event in the following 24 h. Total administered dose of dexmedetomidine, time of sedation onset, success of sedation, recovery time, expected side effects (hypotension, bradycardia and hypertension) and other adverse events were recordered.

Results

We included 60 patients in the study. Thirty (50 %) were diagnosed, or in the course of being diagnosed, with autism, autistic spectrum disorder or behavioural disorders. There were 45 males (76.3 %) and 14 females (23.7 %) and the mean age was 3 ± 1.6 years. ABR testing was undertaken successfully in 57 of the 59 patients, giving a success rate of 96,6 %, 95 % CI (88.5 %–99.1 %). Twenty patients (33.9 %) had to receive a second dose of dexmedetomidine. The mean time of sedation onset was 32.4 ± 18.3 min. The mean recovery time, defined as the time between the end of the exam and the awakening of the patient, was 48 ± 24.7 min. The adverse effects of intranasal dexmedetomidine were mainly hemodynamic: 28 patients (48.3 %) experienced hypotension and 31 patients (53.5 %) experienced bradycardia. However, no patient required an intervention to correct the hypotension or bradycardia. Those events were managed by simple wake up stimulations. None of the patients experienced respiratory depression or other adverse events.

Conclusion

Intranasal dexmedetomidine is an effective, safe, and simple-to-use sedative agent for auditory brainstem response testing in children, especially in the case of non-cooperative children.

Figure 1. MAD nasal atomizer.

Références

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