

SAFETY AND FEASIBILITY OF INTRANASAL DEXMEDETOMIDINE FOR SEDATION DURING BRAIN MRI IN NEONATES WITH CRITICAL CONGENITAL HEART DEFECTS

Jungner Å¹, Björkman-Burtscher I², Ley D¹

¹ Lund University, Skane University Hospital, Department of Clinical Sciences Lund, Paediatric surgery and neonatal care, Lund, Sweden

² University of Gothenburg and Sahlgrenska University Hospital, Sahlgrenska Academy, Department of Radiology, Gothenburg, Sweden

BACKGROUND AND AIM

As a part of a clinical research study, neonates with critical congenital heart defects were subjected to pre- and post-operative brain MRI scans. In 27 of 46 MRI examinations intranasal dexmedetomidine was given as an adjunct to the "feed and swaddle" approach.

METHODS

Preoperative brain MRI scans were done at 2–12 days of age with administration of 1 mcg/kg of dexmedetomidine intranasally at the MRI facility. All neonates were on alprostadil-infusion when performing the preoperative MRI scans. Postoperative brain MRI scans were done after removal of myocardial electrodes at 9–24 days of age with administration 1–1.5 mcg/kg dexmedetomidine intranasally at the MRI facility. For baseline characteristics of dexmedetomidine-treated neonates see table 1. The MRI protocol included clinically relevant sequences lasting 35 minutes, followed by a research package lasting 14 minutes.

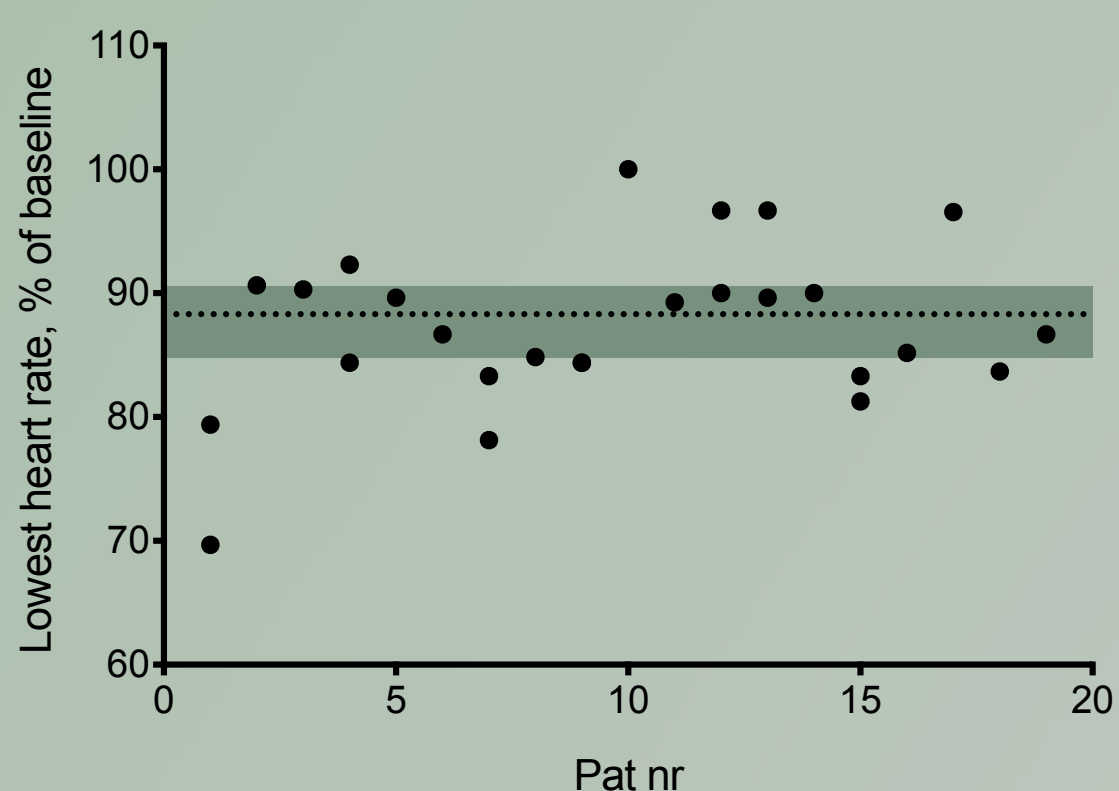


Fig 1 Lowest heart rate displayed as percent of first recorded value. Dotted line denotes median decline from 100%, shaded area indicates IQR. One data point is missing due to lack of data, two data points coincide.

RESULTS

27 examinations in 19 neonates were done using dexmedetomidine intranasally, with 9 preoperative examinations and 18 postoperative. All examinations but one were of good quality for clinical diagnosis. 20 examinations completed the full protocol, 6 the clinical part only. Heart rate diminished by a median of 11.7% (IQR 9.4–15.6%) with a lowest recorded heart rate of 113 min⁻¹, see fig 1. No arrhythmias were noted, nor were any hypotensive or hypertensive events. No adverse respiratory events occurred. All neonates were awake and alert when returning to the ward.

CONCLUSION

In selected neonates with critical congenital heart defects, dexmedetomidine intranasally is feasible and appears to be safe for sedation during brain MRI scans.

Gestational age	38+2 – 40+5
Birth weight (g)	2750 – 4120
Sex (boy/girl)	11/8
Diagnosis (n)	d-TGA/VSD (7) d-TGA/IVS (5) d-TGA/PS (1) PA/IVS (2) PA/VSD (1) PA/RV hypoplasia/IVS (1) AA hypoplasia/VSD (1) IAA/LVOTO (1)

Table 1 Baseline characteristics of dexmedetomidine-treated neonates

d-TGA Dextro-transposition of the great arteries
VSD Ventricular septal defect
IVS Intact ventricular septum
PS Pulmonary stenosis
PA Pulmonary atresia
RV Right ventricle
AA Aortic arch
IAA Interrupted aortic arch
LVOTO Left ventricular outflow tract obstruction