MRI Sedation at Red Cross War Memorial Children's Hospital, Cape Town. A retrospective re-audit

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Introduction and aims

Since 2013, Red Cross Children's Hospital department of anaesthesia has been using Dexmedetomidine for procedural sedation. Routine uses are for MRI, radiotherapy and auditory brainstem responses. Historically, chloral hydrate and/or benzodiazepines were used, with labour heavy general anaesthesia reserved for refractory cases.

To look at efficacy and safety of dexmedetomidine to facilitate MRI in our hospital, I reviewed patients referred between 2018 – 2020, including age, drugs, doses and routes used, and MRI procedure. Additionally, I looked at cases where intra-nasal dexmedetomidine had been unsuccessful- defined as a patient requiring subsequent gas induction to achieve intravenous access.

Methods

I collected the above data from 1019 patients from August 2018-April 2020 who had presented for MRI scans with anaesthetic support. I also compared drug combinations used on a previous audit on this topic from 2013-2015. A subset of 30 patient case notes was examined in further detail, to review monitoring used and any recorded complications.

Discussion and conclusion

Whilst polypharmacy remains an ongoing confounder in this review, the contrast in use of many other drugs in our previous audit from has fallen. Reasons for polypharmacy may include issues surrounding need for high list turnover (the MRI department has 1 full day list and 2 half day lists per week, with 8 patients on a full day) and unfamiliarity surrounding dexmedetomidine alone.

We are unable to run dexmedetomidine infusions in our department due to no MRI compatible pumps. However, this review suggests that with an MRI department familiar with its use and limitations, that bolus and (if needed) top up doses works equally successfully.

The use of dexmedetomidine, with its desirable safety profile and rapid wake up time has led to higher efficiency, cost saving, rapid list turnover and earlier patient discharge home. Whilst the complexity and polypharmacy used for MRI would hinder a nurse led service, we are now trialling an acute pain nurse led intranasal dexmedetomidine service for Auditory Brainstem Response Testing.

With increasing pressures on tertiary centres, our practice has demonstrated that sedation can be safely delivered without need for a full general anaesthetic, thus potentially avoiding complex retrievals and network planning.

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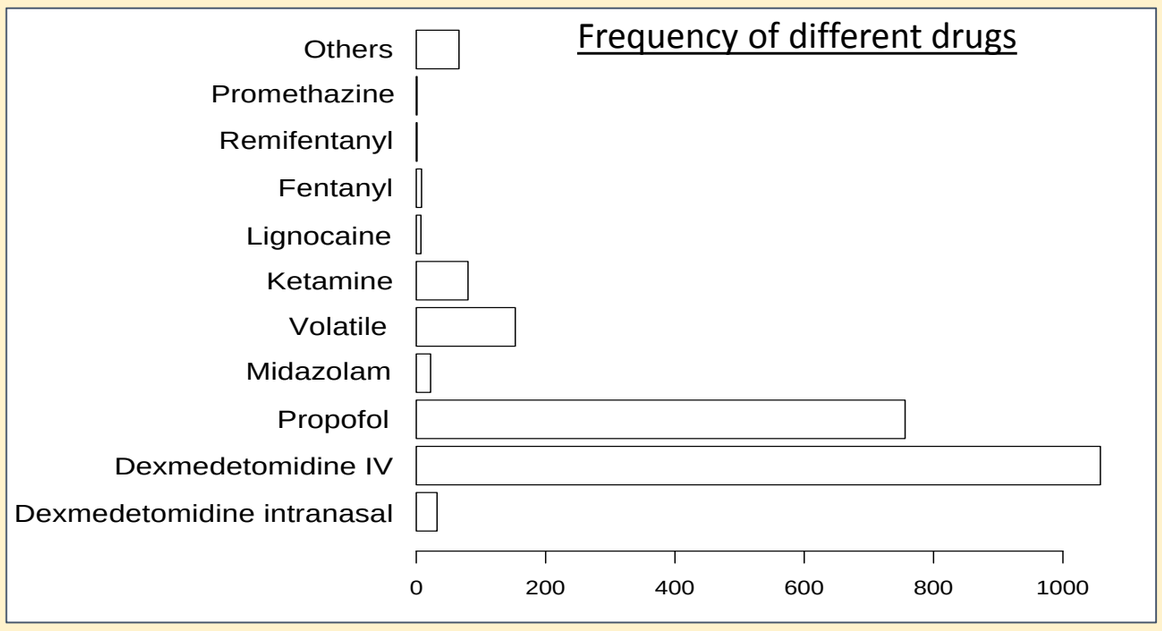
Results

29 patients received intranasal and 232 intravenous dexmedetomidine. 701 patients received intravenous dexmedetomidine plus 1 other intravenous agent (predominantly propofol), whereas 65 patients received it and >1other intravenous agent. 17 patients received no dexmedetomidine (5 of whom were ventilated PICU patients). Brain and/or spinal MRI (+17 CTs) were the predominant imaging requested. The highest volume of patients were under 5 years, with the greatest number in that subgroup being those under 12 months.

Average initial dosing of intranasal dexmedetomidine was 3-4mcg/kg, iv at 1.3mcg/kg with top-up doses at 0.5mcg/kg. Initial bolus dose Propofol was 1mg/kg.

No complications were recorded in our patient subset.



Agent 1	Agent 2	Agent 3	Agent 4	N (%)
Dexdor				**221 (21.5)**
Dexdor	Volatile			**69 (6.7)**
Dexdor	Propofol	Volatile		**59 (5.7)**
Dexdor	Propofol	Midazolam	Volatile	**2 (0.2)**
Dexdor	Propofol	Ketamine	Volatile	**2 (0.2)**
Dexdor	Propofol			**575 (56)**
Dexdor	Propofol	Ketamine		**58 (5.6)**
Dexdor	Propofol	Midazolam		**9 (0.9)**
Dexdor	Propofol	Fentanyl		**1 (0.1)**
Dexdor	Propofol	Ketamine	Fentanyl	**3 (0.3)**
Dexdor	Propofol	Lignocaine		**4 (0.4)**
Dexdor	Lignocaine			**1 (0.1)**
Dexdor	Ketamine			**15 (1.5)**
Dexdor	Propofol	Promethazine		**1 (0.1)**
Dexdor	Midazolam			**7 (0.68)**
Dexdor	Propofol	Remifentanil		**1 (0.1)**

References:

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