

Introduction

- Myringotomy tube placement (BMT), is a common, brief pediatric surgical procedure performed frequently in infants and young children but has limited published protocols for anxiolysis and analgesia. With concern regarding use of the current protocol, especially the use of IM ketorolac in the operating room, an interprofessional team led by a nurse practitioner evaluated the effectiveness of Dexmedetomidine (Dex) as a sole medication for both preoperative anxiolysis and perioperative analgesia in this population.
- Standard care included preoperative treatment with Midazolam, intraoperative treatment with IM Ketorolac and PRN Acetaminophen in the PACU.
- We hypothesized that preoperative intranasal Dexmedetomidine (Dex) as a single alternative medication will provide both anxiolysis and perioperative analgesia compared to our standard treatment.

Methods

- Institutional Review Board application determined study as expedited.
- After education and discussion with key stakeholders, including anesthesiologists, nurse anesthetists, pre-surgical nurse practitioners and surgical and post-anesthesia care unit (PACU) nurses, the change in medication protocol for BMT took place.
- Medication change was only indicated for children who were otherwise healthy without additional procedures performed)
- Retrospective chart review was then completed by the team to compare data for children who received the previous standard protocol and following the medication protocol change.
- New practice included Dexmedetomidine intranasal as premedication and oral acetaminophen in the PACU PRN.
- Data collected for each group included:
 - ❖ Quality of Anxiolysis by subjective and child induction behavior (CIBA) scales.
 - ❖ Quality of perioperative analgesia by pain scores using the Face, Legs, Activity, Cry, Consolability tool (FLACC)
 - ❖ Need for acetaminophen in the PACU
 - ❖ Emergence delirium by Pediatric Anesthesia Emergence Delirium (PAED) score
 - ❖ Length of PACU stay
 - ❖ Family satisfaction scores

Table 1. Demographic and Baseline Patient Characteristics

	Standard (N=154)	Dexmedetomidine (N=122)
Mean Age (months)	23.15	22.68
Weight (Kg)	12.48	12.12
Mean Procedure Duration (min)	5.57	6.04
Past BMT?		
Yes	4 (3%)	6 (5%)
No	148 (97%)	116 (95%)

Table 2: Descriptive Statistics of Study Variables

	Standard (N=154)	Dexmedetomidine (N=122)	P value
FLACC Score	0.75 (1.46)	1.09 (1.87)	0.04
PAED Score	7.21 (5.78)	58.3 (1.69)	0.1
PACU length of stay (min)	33.5 (13.92)	36.71 (11.42)	0.005
Post-operative Day (POD)1 of Grade of Pain	1.16 (0.42)	1.00 (0)	<0.001
Family Satisfaction	100%	100%	
Additional analgesiaa need			0.002
None	142 (92%)	93 (76%)	
Acetaminophen (patients)	11 (7%)	27 (22%)	
Ibuprofen (patients)	1 (1%)	1 (1%)	

Table 3: Multiple Linear Regression, Quality of Anxiolysis (CIBA)

	Standard Error	β	p	Confidence Interval (95%)	
Type of Pre- Medication	0.09	0.3	<.001	0.16	0.5
Gender	0.07	-0.02	0.78	-0.16	0.12
Race	0.08	-0.17	0.008	-0.39	-0.06
Insurance	0.08	0.02	0.73	-0.13	0.19
Timing of Premedication from Induction	0.002	-0.02	0.13	-0.01	0.001

Timing = Time from premedication to induction, B = standardized coefficient, LB = Lower bound value of the co-efficient interval, UB = upper bound value of the confidence interval.

Results

- Baseline demographics were similar between the two patient groups.
- Pain scores were significantly higher in the Dex group and significantly more patients received rescue acetaminophen. (Table 2)
- There were no differences in the delirium scores (PAED)
- Patients in the Dex group stayed average of 3 minutes longer in the PACU than standard group.
- Dex was associated with higher CIBA scores

Conclusions

- BMT is a brief pediatric surgical procedure that requires both anxiolysis and analgesia for young children, yet little published to recommend treatment.
- The use of Dex appears to be a feasible alternative to standard analgesic regimen in BMT without delay in recovery.
- Though pain scores were significantly higher in Dex group, it is not clinically significant.
- Discontinuation of Intraoperative Ketorolac was achieved
- Reduced quality of anxiolysis in the Dex group as compared to standard of care warrants future study.

Nurse Practitioner Practice

- Nurse Practitioners caring for patients in the pre-operative and post-operative areas recognized the need for a change in medication practice.
- An interprofessional group led by a nurse practitioner was successful in planning and collecting data for this study.
- Change in practice resulted to limit and ease intraoperative administration medication practices

References

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