

[GA1-50] Retrospective chart review evaluating the effectiveness of intranasal dexmedetomidine and midazolam for moderate sedations in appropriate pediatric patients presenting for non-painful diagnostic studies

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Introduction:

Pediatric patients frequently require sedation for studies in order to ensure motionlessness during imaging. Pediatric sedation with IV dexmedetomidine has been well described. Intranasal (IN) administration of dexmedetomidine has been described for preoperative anxiolysis, but has not been well evaluated for pediatric sedations. In 2011, providers at the University of North Carolina (UNC) began using IN dexmedetomidine and midazolam for moderate sedations in appropriate pediatric patients presenting for non-painful diagnostic studies. The objective of this study is to report our institutional experience with IN dexmedetomidine and midazolam.

Methods:

Following IRB approval, a retrospective chart review was conducted of all pediatric patients who received IN dexmedetomidine and midazolam from August of 2011 through March of 2012. Per protocol, all patients were administered IN dexmedetomidine 3 mcg/kg and midazolam 0.2 mcg/kg via an IN mucosal atomization device by RNs credentialed to provide moderate sedation. Baseline data was recorded including demographics, diagnosis, and indication for the study. From the sedation record, the dose of intranasal medications, time of administration, time to onset of sedation, length of study, time to recovery/discharge, vital signs at 5 minute intervals, sedation/arousal scores, and need for rescue medications because of a failed sedation were extracted.

Results:

A total of 131 sedations with IN dexmedetomidine and midazolam occurred over the 8-month study interval. 123 patients were included in the final analysis (Table 1). The mean time to sedation was 29.8 minutes (Table 2). There were no documented episodes of respiratory depression. The incidence of hypotension was 45.6%, none of which was clinically significant. The incidence of failed sedation was 8.5% (3% for CT scan and 18% for MRI).

Conclusions:

Intranasal administration of dexmedetomidine and midazolam to pediatric patients is safe and effective for moderate sedation in appropriate pediatric patients presenting for non-painful diagnostic studies, with the added potential benefit of a “no-needle” sedation.

References:

- Iirola T et al. Bioavailability of dexmedetomidine after intranasal administration. *European Journal of Clinical Pharmacology* 2011; 67: 825-831.
- Mason KP et al. High dose dexmedetomidine as the sole sedative for pediatric MRI. *Pediatric Anesthesia* 2008; 19: 403-11.
- Yuen VM et al. A comparison of intranasal dexmedetomidine and oral midazolam for premedication in pediatric anesthesia: A double-blind randomized controlled trial. *Anesthesia and Analgesia* 2008; 106: 1715-21.

Table 1 Characteristics of patients undergoing IN dex sedation

	All (n=123)		CT (n=67)		MRI (n=50)		Other (n=6)		p-value*
Age, mean (SD)	1.49	(1.05)	1.54	(1.07)	1.45	(1.07)	1.19	(0.76)	0.645
Range	0.26	4.36	0.30	4.36	0.26	4.16	0.28	2.49	
Gender, n (%)									
F	47	(38)	24	(36)	20	(40)	3	(50)	0.702
M	76	(62)	43	(64)	30	(60)	3	(50)	
Diagnosis, n (%)									
Craniosynostosis	29	(24)	29	(43)	0	(0)	0	(0)	<.0001
DD	10	(8)	1	(1)	9	(18)	0	(0)	
Hearing Loss	22	(18)	3	(4)	15	(30)	4	(67)	
Hydrocephalus	4	(3)	3	(4)	1	(2)	0	(0)	
NAT	8	(7)	4	(6)	4	(8)	0	(0)	
Other	40	(33)	25	(37)	13	(26)	2	(33)	
Seizures	10	(8)	2	(3)	8	(16)	0	(0)	
ASA status, n(%)									
1	14	(11)	9	(14)	4	(8)	1	(17)	0.075
2	95	(78)	46	(70)	44	(88)	5	(83)	
3	12	(10)	10	(15)	2	(4)	0	(0)	
4	1	(1)	1	(1)	0	(0)	0	(0)	

* CT vs MRT

Table 2 Sedation characteristics of patients undergoing IN dex sedation

Variable	All			CT			MRI			Other			R-value*
	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range	
Dex dose	3.0	0.1	2.6-3.1	3.0	0.1	2.6-3.1	3.0	0.0	2.7-3.1	3.0	0.0	3.0-3.0	0.0309
Midaz Dose	0.22	0.08	0.17-0.69	0.20	0.04	0.17-0.49	0.24	0.11	0.19-0.69	0.20	0.01	0.19-0.20	0.0074
Time To Sedation, min	29.8	20.7	10.0-138.0	28.6	16.0	11.0-86.0	31.5	26.5	10.0-138.0	28.0	8.9	17.0-39.0	0.4767
Scan length, min	27.4	24.9	3.0-120.0	9.2	6.9	3.0-40.0	49.1	22.6	120.0	45.2	20.2	30.0-85.0	<.0001
Recovery Time, min	80.1	37.6	15.0-260.0	83.2	36.8	15.0-195.0	78.3	39.8	15.0-260.0	62.2	23.5	20.0-83.0	0.4938
Sedation Time, min	136.4	41.6	56.0-340.0	120.6	33.7	56.0-235.0	157.6	44.1	78.0-340.0	135.3	15.4	117.0-156.0	<.0001

* CT vs MRT