Pediatric emergence delirium and early postoperative negative behavior within two weeks after adenotomy

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Background:

The aim of this prospective multicenter observatory study was to evaluate the incidence of pediatric emergence delirium (ED) after elective adenotomy and the occurrence of early postoperative negative behavior (ePONB) within two weeks after outpatient surgery.

Methods:

The study cohort comprised n=222 patients between 1 and 7 years of age. Premedication was performed with Midazolam (0.3–0.5mg/kg). The first cohort (n=108) received a multimodal anesthesia based on total intravenous anesthesia with Propofol and Remifentanyl in combination with preemptive Dipidolor (0.1mg/kg), Ibuprofen (10mg/kg), Dexamethason (0.15mg/kg) and Ketanest S (0.1mg/kg). The second cohort (n=114) additionally received Clonidine i.v. (2µg/kg) intra-operatively. We analyzed the quality of induction and assessed ED and pain using the pediatric anesthesia emergence delirium (PAED) scale and the FLACC-Score. ED was defined according to Locatelli et al. [1] as a PAED score ≥ 9 for the first 3 criteria (eye contact, purposeful movement, aware of surrounding) [Fig. 1]. In addition, we defined ePONB to be present when at least 5 of 27 criteria of the questionnaire were positive [2;3].

Figure 1:

	Child	not at all	just a little	quite a bit	very much	extremely
Delirium- criteria (ED I Score)	...keeps eye contact	4	3	2	1	0
	...shows purposeful movements	4	3	2	1	0
	...aware of surrounding	4	3	2	1	0
Agitation- criteria (ED II Score)	...is restless	0	1	2	3	4
	...is inconsolable	0	1	2	3	4

Figure 2:

Figure 3:

Figure 4:

Figure 5:

Results:

The incidence of postoperative delirium was 22% versus 25% with and without Clonidine, respectively. Clonidine had no influence on the length of stay before discharge from the PACU. Unexpectedly, the incidence of ED was significantly higher in male patients compared to female patients (29% vs. 15%, $p=0.02$). The occurrence of ePONB within two weeks after surgery was 14%. ED was positively correlated with the occurrence of ePONB (24% vs. 11%, $p=0.04$). The medical therapy of ED with propofol did not extend discharge from the PACU.

Conclusion:

Despite a multimodal pharmacological approach the incidence of ED after adenotomy remains high [Fig. 2]. Although many studies favored the use of Clonidine the additional use of intraoperative Clonidine within a multimodal pharmacological concept only revealed a small reduction in the incidence of ED (22% vs. 25%) after adenotomy. Against the current literature we saw a higher incidence of ED in male patients [Fig. 4]. ED not only plays a role immediately after surgery but is linked to ePONB within two weeks after adenotomy [Fig. 3; Fig. 5]. In summary, ED affects one of four preschool children following adenotomy and cannot be prevented in all cases. Basically, it seems advisable to explain ED to parents ahead of surgery and inform on ePONB that may occur after discharge.

References:

- [1] Locatelli et al. Paediatr Anaesth. 2013 Apr;23(4):301-8
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- [3] Kain et al. Anesth Analg. 2004 Dec;99(6):1648-54