Basrah Journal Of Surgery

Bas J Surg, September, 17, 2011

THE EFFECT OF DEXAMETHASONE ON POST TONSILLECTOMY MORBIDITIES IN CHILDREN

Raid Yaqoub Yousef[#] & Saffaa Khalaf Faleh[$]

[#]MB,ChB, FIBMS (ENT). [$]MB,ChB, FIBMS (ENT). Al-Diwaniya Teaching Hospital, Department of Otolaryngology.

Abstract

This study aimed to evaluate the effect of preoperative single dose of Dexamethasone on postoperative morbidities in children undergoing tonsillectomy.

This is a prospective study considering 90 children with chronic tonsillitis who underwent tonsillectomy between June 2010 and December 2010 at the Department of Otolaryngology in Al-Diwaniah Teaching Hospital in Al-Diwaniah city, Iraq.

Compared with placebo, Dexamethasone group have lower percentage of post tonsillectomy morbidities (pain, postoperative nausea & vomiting and uvular edema) but without statistical significant.

In conclusion, there is no statistical beneficial effect of preoperative dexamethasone on the postoperative morbidities in children undergoing tonsillectomy.

Introduction

Tonsillectomy is one of the most common operations done in ENT specialty. Pain, nausea, vomiting, edema of uvula and poor oral intake regarded as the most common morbidities following this operation[1]. Postoperative nausea and vomiting (PONV) can result in dehydration, delayed discharging, tension in suture line, venous hypertension, bleeding and pulmonary aspiration. Several studies had been done to prevent or decrease these morbidities. The use of dexamethasone is one of the methods to eliminate these morbidities depending on the anti inflammatory effect and anti emetic effect for chemotherapy induced vomiting[2]. The aim of this study is to assess the effect of a single preoperative dose of Dexamethasone on postoperative morbidities (pain, vomiting, bleeding and edema of uvula) in children underwent tonsillectomy using a standardized anesthetic and surgical techniques[3].

Materials and methods

This study is prospective in nature, it involves 90 children with chronic tonsillitis, they had been admitted to the ENT Department at Al-Diwania Teaching Hospital for tonsillectomy by dissection and/or adenoidectomy and/or myringo-tomy between June 2010 and December 2010. The age ranged from 3 years to 17 years. They were 45 males and 45 females. Children who received anti emetic steroid, antihistamine and antibiotic were excluded from this study. Study design is randomized double blind and placebo control. Patients are prospectively randomized to receive either 0.5mg/kg (max. dose 8mg of dexamethasone) or an equivalent volume of normal saline. In our study the Dexamethasone or saline is given immediately after IV access was established by the anaesthetist. Patient was transferred to the ENT ward after full recovery from GA. Pain assessment either by objective pain scale (ops 0-10) in patients below 8 years (appendix 1)[4] or by visual analogue scale(vas 0-100) in patients above 8 years(figure 1)[5]. For analysis, patients in each group (dexamethasone & control) are divided

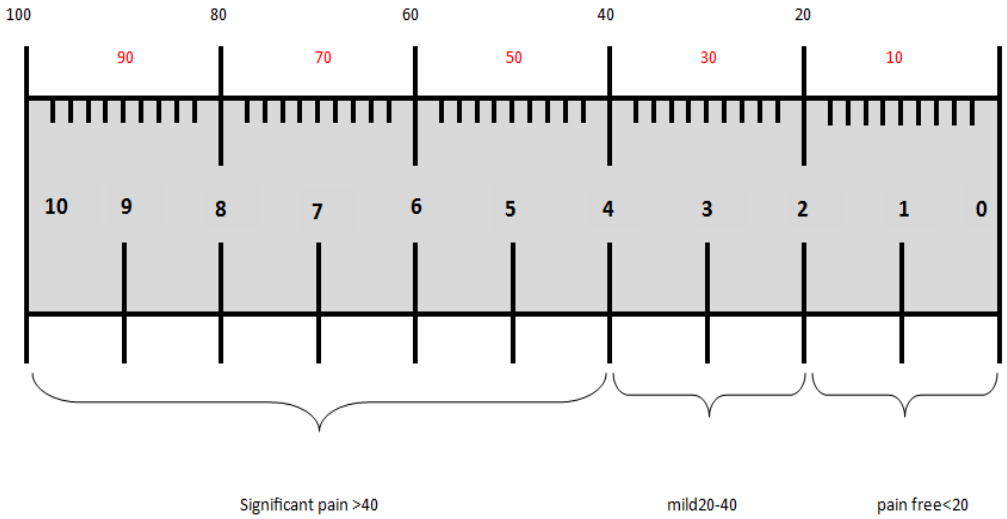
into three pain groups for early period (0-6 hrs) and late period (6-24 hrs). Significant pain = ops > 6 or vas >40, mild pain = ops 4-5 or vas>20<40, pain free = ops 0-3 or vas<20. The nurse record the incidence of vomiting (vomiting repeated within 1-2 minutes recorded as a single episode) nausea is not recorded because it is difficult to assess in children. Uvula edema was assessed postoperatively by direct examination of oropharynx. Hemorrhage if occur was recorded. All morbidities (pain, vomiting, uvular edema and hemorrhage) are recorded in early period and late period after operation. The comparison of parameter data in this study was performed with chi-square test, a p value less than 0.05 was considered significant.

Appendix (1): Objective pain scale

Appendix 1	Objective pain scale	
observation	Criteria	points
Blood pressure	+10%of preoperative >20% of preoperative >30% of preoperative	0 1 2
Crying	Not crying Crying but respond to tender loving care Crying & not respond to tender loving care	0 1 2
Movement	Not Restless Thrashing	0 1 2
agitation	Patient asleep or calm Mild hysterical	0 1 2
Verbalizes pain	Asleep or no verbalizes Cannot localize pain Localized pain	0 1 2

Figure (1): Visual Analogue Scale

Agonizing horrible dreadful uncomfortable annoying none



Visual Analogue Scale (VAS) is usually a horizontal line, 100mm in length, anchored by word descriptors at each end the patient mark on the line the point that they feel represent their perception of their current state. The VAS score is determined by measuring in millimetres from the left hand end of the line to the point that the patient marks.

Results

Except for age, all demographic characteristic are comparable for both groups (table I).

Age is slightly higher in the Dexamethasone as shown in table I.

Table I: Patients demographic and clinical data

Parameter	control	Dexamethasone	P value
Age(years)	5.2	9.5	>0.001
Weight(kg)	17.2	22	0.5>p>0.1
M/f No. of patient	21/24	24/21	0.5>p>0.1
Duration of surgery (minutes)	19.6	16.8	P<0.5
Surgery type T T+A T+A+ M	30 12 3	39 3 3	0.05>p>0.5
1st oral intake(hrs)	3	3.7	0.1>p>0.005
Method of analysis of pain Ops/vas	36/9	9/36	0.9>p>0.5(ops) p>0.01(vas)

T=tonsillectomy A=Adenoidectomy M= myringotomy Ops=objective pain scale vas=visual analogue scale. Age, weight, duration of surgery &time of first oral intake presented as mean.

Assessment of pain was done using ops in patients below eight years of age (control n=36, Dexamethasone n=9) and using vas in patients above eight years of age (control n=9, Dexamethasone n=36). Dexamethasone group have lower % of late period without statistical significance as shown in table II.

Table II: Severity of post tonsillectomy pain

pain	Early (0-6)hr		Late(6-24)		P value
	Control No/%	Dexa. No/%	Control No/%	Dexa. No/%	
significant	27 60%	24 53.3%	6 13.3%	Zero	0.5>p>0.1
mild	15 33.3%	21 46.6%	39 86.6%	18 40%	0.5>p>0.1
Pain free	3 6.6%	Zero	Zero	27 60%	p>0.9

The % of incidence of early & late pov is slightly higher in control group without statistical significance as shown in table III.

Table III: Incidence and severity of pov

pov	control		Dexa.		P value
	No.	%	No.	%	
Early None	24	53%	30	66%	0.5>p>0.1
Once	15	33%	6	13.3%	
multiple	6	13.3%	9	20%	
Late None	39	86.6%	42	93.3%	0.95>p>0.5
Once	6	13.3%	3	6.6%	
multiple	0	0%	0	0%	
Total no. of vomiting episodes	36		30		

The percentage of incidence of uvular edema is slightly higher in control group in early period (control=60%, Dexamethasone=20%) and in late period (control=13%, dexamethasone= 0%) but without statistical significance (p>0.05). There is one case of early postoperative bleeding in Dexamethasone group without statistical significance.

Discussion

Tissue injury induces acute inflammation. Nerve irritation and spasm of exposed pharyngeal muscle is known to play a role in genesis of post tonsillectomy pain. Oropharyngeal pain &irritation of gastric mucosa by swallowed blood are two main contributors toward high incidence of ponv following tonsillectomy. It was postulated that; inhibiting phospholipase enzyme, corticosteroid block both cyclo-oxygenase & lipo-oxygenase pathways of prostaglandin production, this decreases tissue damage by inflammation & decreases pain. Corticosteroids are used in post chemotherapy & radiotherapy to decrease vomiting & nausea, but by which mechanism it is not fully understood[6]. We select Dexamethasone as it is highly potent & has long half life (36-72) hrs. So that, the effect would remain even after the discharge of the patient. Single iv dose was used as it is devoid of side effects like gastritis and adrenal suppression. It has been found in the present study that, there is no significant decrease in post tonsillectomy pain & uvular edema by using preoperative Dexamethasone (0.5mglkg up to 8mg). This result agreed with Gtlin FI et al. (1991)[7], Volk MS, et al, (1993)[8]. Ohlms LA, et al. (1995)[9]. These three studies shows that, there's no beneficial effect of Dexamethasone on the incidence of postoperative pain and uvular edema after tonsillectomy in children. our results in contrast with Goldman AC et al. (2000)[10], Stewart Dl et al (2001)[11], Mokhtar MD.et al. (2003)[12] & Anila D et al (2005)[13]. These four studies showed that, Dexamethasone provide significant analgesia for patients who underwent tonsillectomy. Also in our results, we found that no significant difference was noted between ponv in Dexamethasone and control groups. This result agreed with Galin FI et al (1991)[7], Volk MS, et al (1993)[8], Ohlms LA, et al (1995)[9], Anila D (2005)[13]. But this result disagreed with Splinter WM. et al (1991)[14],Pappas, ALS, et al (1998)[15], Henzi, et al (2000)[16], Stewart DL,et al (2001)[13], Aouad MT, et al (2001)[17]& Mokhtar, MD et al (2003)[14].

These six studies showed that preoperative Dexamethasone significantly reduced ponv in children who underwent tonsillectomy, and for the relative safety and low cost most authors recommend routine use of cs during pediatric tonsillectomy[18]. Also in our study, we found that there's no significant effect of Dexamethasone on postoperative bleeding. These results agreed with most of the above studies[7-11,13-15].

Conclusion

We concluded that, a single preoperative iv dose (0.5mg/kg up to 8mg) of Dexamethasone have no effect in decreasing post tonsillectomy morbidities in children undergoing tonsillectomy.

References

1. Anderson R.Krohgk. pain as a major cause of post operative nausea, Can J Anaesth 1976;ch23:pp366-9.
2. Cassileth PA, Lusk EJ,TORRI S, Dinubile N,Gerson SL. Anti emetic efficacy of Dexamethasone in patient receiving cancer chemotherapy, Arch inter med 1983;ch143:pp1347-9.
3. Yeliaveta Shnayder MD.Current Diagnosis and Treatment in Otolaryngology,Head and Neck Surgery; chapter 19 :pp 346.
4. Hannallah RS,Broadman LM,Belman B, Abramowitz MD,Epstein BS. pain in pediatric ambulatory surgery. Anesthesiology 1987;ch66:pp832-34.
5. Wewrs M.E.&Lowe N.KA critical review of visual analogue scale in the measurement of clinical phenomena. Research in nursing and health 1990;ch 13:pp227-236.
6. Jones AL ,Hill AS,soukopM, Et al .comparison of Dexamethasone and ondasteron in the prophylaxis of emission induced by moderately emetogenic chemotherapy.Lancet1991;ch338:pp483-7.
7. Catlin FI, Grimes WJ, The effect of steroid therapy on recovery from tonsillectomy in children. Arch Otolaryngology, Head Neck Surg1991;ch 117:pp 649-52.
8. Volk MS, Martin P, Brodsky L, Stanievich JF, Ballon M. The effect of preoperative steroids on tonsillectomy patients. Otolaryngology Head Neck Surg 1993;ch 109:pp726-30.
9. Ohlms LA, Wilder RT, Weston B. Use of intraoperative corticosteroids in pediatrics tonsillectomy. Arch Otolaryngol Head Neck Surg 1995;ch 121:pp 737-42.
10. Goldman A,Govindarajs & Rosenfield RA. meta-analysis of Dexamethasone use with tonsillectomy. Otolaryngology. Head &neck surgery2000;ch123:pp682-686.
11. Steward DL, Welge JA, M yer CM, Do steroids reduce morbidity of tonsillectomy, Meta-analysis of randomized trials. Laryngoscope 2001; ch111:pp1712-8.
12. MokhtarElhakim MD, Naglaa m. Ali MD, Mostafa K.Raid MD, Muna Reft MD Dexamethasone reduced post operative vomiting and pain after pediatric tonsillectomy. Obstetrical and pediatrics anesthesia .can J. anaesth 2003;ch50,4:pp392-397.
13. Dr.AnilaD.Malde,DR.Vinod.S.Sonawne,Dr.SheetalR.Jagtap.Effect of dexamethasone on post tonsillectomy morbidities .IndianJ.Anasesth 2005;ch49:pp202-207.
14. Splinter WM, Roberts DJ. Dexamethasone decreases vomiting by children after tonsillectomy. Anesth. Analg. 1996;ch 83:pp913-6.
15. Pappas ALS, Sukhani R, Hotaling AJ, et al. The effect of preoperative Dexamethasone on the immediate and delayed postoperative morbidity in children undergoing adenotonsillectomy. Anesth. Analg 1998;ch 87:pp57-61.
16. Henzi I,Walder B, Tramer MR. Dexamethasone for the prevention of post operative nausea and vomiting a quantitative systematic review. Anesth. Analg. 2000;ch90(1):pp186-94.
17. Aouad MT, Siddik SS, Rizk LB, Zaytoun GM, Baraka AS. The effect of Dexamethasone on postoperative vomiting after tonsillectomy. Anesth Analg. 2001; ch92:pp636-40.
18. Niels Mygnd ,Jens Thomsen. cortico steroid in otolaryngology. Scott-Brown's Otorhinolaryngology ,Head and Neck surgery, seventh edition 2008;ch34;pp422.