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The Effect of Dexametasone on Morbidity of Adenotonsillectomy in Iranian Children

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Abstract: Post operative complications of tonsillectomy include insufficient oral feeding, pain, nausea, vomiting and bleeding. The aim of this study is to investigate the further effect of Dexametasone in case of its post operation continuation up to 24 h on its complications. In a double blind clinical trial study, 103 patients in age 3-14 year that had indication of tonsillectomy were enrolled to study and tonsillectomy was performed by single surgeon in the same surgical and anesthetic single dose of Dexametasone administrated for all patients and in Dexametasone group patients administration of Dexametasone continued q6h up to 24 h post operatively and then patients compared as Postoperative complications. Finding results showed that incidence of vomiting and pain score was significantly lower in Dexametasone group patients. Continuous of Dexametasone q6h up to 24 compared to single dose of Dexametasone more reduce Postoperative complications and oral feeding started earlier in Dexametasone group and delay discharge in Dexametasone group were lower than control group.

Key words: Dexametasone, post operative complications, tonsillectomy

INTRODUCTION

Tonsillectomy is one of the most common surgical procedures performed worldwide. Despite advances in anesthetic and surgical techniques, post-tonsillectomy morbidity remains a significant clinical problem for patients, families and physician (Steward *et al*., 2001).

Of the morbidities that follow tonsillectomy, nausea and vomiting, fever, pain and inadequate oral intake are the most commonly encountered. The incidence of Postoperative Nausea and Vomiting (PONV) has been reported as between 40 and 70% (Kaan *et al*., 2006; Furst and Rodarte, 1994; Litman *et al*., 1994).

Postoperative Nausea and Vomiting (PONV) can due to patient discomfort, delayed hospital discharge and pulmonary aspiration. Incidence of this complication increased by age and high incidence of that was in 11-14 years old and difference by surgical techniques (Fazel *et al*., 2007; Aouad *et al*., 2001).

In electro dissection technique bleeding immediately reduces after surgery but pain, discomfort and poor feeding increased secondary to local inflammation, nerve stimulation and muscular spasm (Elhakim *et al*., 2003; Weimert *et al*., 1990).

In 35 years ago, several studies evaluated effects of systemic corticosteroid in reduce of Postoperative Morbidity (POM) of adenotonsillectomy and there has been no agreement on this issue yet (Steward *et al*., 2001).

Some have regarded it as useful and some others as unusual (Splinter and Roberts, 1996; Tewary *et al*., 1993).

Dexametasone as an antiemetic drug used first time in patients under chemotherapy (Jones *et al*., 1991).

Recently, prophylactic effects of Dexametasone evaluated in Postoperative Nausea and Vomiting (PONV) (April *et al*., 1996).

Dexametasone because of the antiemetic and anti inflammation effect due to reduce Postoperative injury, edema and pain and subsequently increase oral intake (Kaan *et al*., 2006; Elhakim *et al*., 2003).

In several study these effect of Dexametasone demonstrated (Steward *et al*., 2001; Kaan *et al*., 2006; Fazel *et al*., 2007; Elhakim *et al*., 2003; Pappas *et al*., 1998).

But on study has been conducted about the issue that if the post operative continuation of Dexametasone could reduce these complications. Our aim is to investigate the further effect of Dexametasone in case of its post operation continuation on to 24 h on its complications.

MATERIALS AND METHODS

In this prospective, double-blinded, placebo-controlled study, 103 children, aged 3-14 year, who underwent tonsillectomy, enrolled to study.

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Patients that in the 48 h ago, that used corticosteroid, antiemetic drug, antihistamine and psychiatric drug and patients had common cold singe were excluded from study.

All patients received 0.5-0.6 mg (max 8 mg) midazolame 20-30 min before anesthesia and after control of vital singe, anesthesia by Ppropafen inducted and Soccinil colin (1.5 m kg^{-1}) was applied to facilitate intubation. Anesthesia continued by 50% N_2O/O_2 and %0.5-1 halothane. Patients received 20-30 cc kg^{-1} Ringer serum and 0.3 mg kg^{-1} (max 8 mg) Dexametasone intravenously.

All surgeries were performed by single surgeon and with cold knife technique and to avoid vomiting suction of stomach secretions was performed at end of surgery. All patients after extubation controlled in the PACU ward for 1 h. Supp acetaminophen 30 mg kg^{-1} q6h administrated for all patients, in control group 50 patient received single preoperative Dexametasone dose and in Dexametasone group (53 patients) Dexametasone administrated intravenously 0.3 mg kg^{-1} (max 8m) q8h up to 24h . Soft and cold diet (150 and 150 cc soft diets) administrated for all patients and Serum infusion was continued until attaining sufficient nutrition. Patients fallowed up as nausea, vomiting and pain score in the fist 24 h at post operative.

Pain score determined by visual analog score (Fig. 1).

Studied variable: Age, sex, weight, surgery duration, anesthesia duration, need for antiemetic drug and pain score.

After 24 h, all the patients were dismissed in case of having no vomiting nor any pain obstructive to sufficient nutrition and were informed about contacting the physician or referring to the hospital in case of continuation of pain, vomiting and disability in eating.

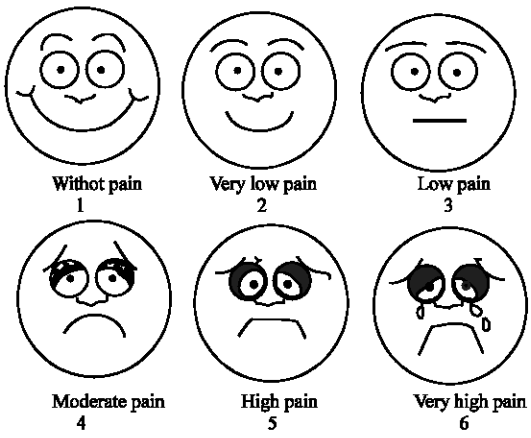

Fig. 1: Visual analog pain score

Data analyzed with SPSS 11.5 ant T-test and Chi-square. Descriptive findings reported as mean and present of frequency and the level of meaningfulness was considered as $p<0.05$.

RESULTS

From 110 patients that had adenotonsillectomy indication, 7 patients were excluded. For all patients administrate preoperatively single dos of Dexametasone and in Dexametasone group also Dexametasone administration continued up to 24 h. No significant difference was found between age, sex, weight, anesthesia and surgery duration (Table 1).

Nausea and vomiting evaluated n 24 h post operative and no significant difference between incidence of nausea ($p = 0.09$). But incidence of vomiting in Dexametasone group was significantly low ($p = 0.025$).

Patients didn't refer with vomiting after discharge.

Four patients of control group and one patient of Dexametasone group had vomiting in first 24 h and need to administrate of antiemetic drug and vomiting controlled with 0/15 mg kg^{-1} of intravenous Methoclopramide.

Incidence of nausea and vomiting were showed in Table 2. Pain score in patients determined by VAS methods and showed in Table 3, at the base of this table, pain scone in patient of Dexametasone group was significantly lower than control group ($p<0.0005$) and pain intensity in Dexametasone group was significantly low.

Time of oral intake in patients showed in Table 4. And despite the apparent similarity among two groups at the beginning of nutrition, most of the patients were able to eat 2 h after the operation, but time of oral intake in Dexametasone group was significantly shorter than control group ($p = 0.001$). Therefore, cautious Dexametasone up to 24 h due to improvement oral intake in patients after tonsillectomy (Table 4).

Table 1: Demographic features and anesthesia and surgery duration between 2 groups

	Dexametasone group (n = 53)	Control group (n = 50)	p-values
Age (year)*	7.75±2.22	7.10±2.54	0.167
Gender (Female/Male)	24/29	20/30	0.588
Weight (Kg)*	22.60±6.98	21.75±6.88	0.507
Anesthesia duration (min)*	46.60±5.86	46.80±6.04	0.868
Surgery duration (min)*	33.62±5.50	33.18±6.47	0.7

*- Mean + Std

Table 2: Incidence of nausea and vomiting between 2 groups

	Dexametasone group (n = 53)	Control group (n = 50)	p-values
Nausea	1(1.9%) †	5(10%)	0.090
Vomiting	1(1.9%)	7(14%)	0.025*

*-Significant, †: Frequency (Percentage)

Table 3: Pain score at the base of VAS between two groups*

Group/pain score	0	I	II	III	IV	V
Dexametasone group (n = 53)	3(5.7%) †	36(67.9%)	14(26.4%)	0(0%)	0(0%)	0(0%)
Control group (n = 50)	4(8%)	8(16%)	33(66%)	5(10%)	0(0%)	0(0%)

VAS: Visual Analogue Scale, †: Frequency (Percentage)

Table IV: Beginning time of oral feeding (hour) between two groups

	Beginning time of oral feeding (h)					
Group/time	1	2	3	4	5	6
Dexametasone group (n = 53)	43(81.1%) †	9(17%)	0(0%)	1(1.9%)	0(0%)	0(0%)
Control group (n = 50)	23(46%)	21(42%)	1(2%)	3(6%)	1(2%)	1(2%)

†: Frequency (Percentage)

DISCUSSION

The most common complications of tonsillectomy are such as pain, insufficient oral intake, vomiting, fever, dehydration and bleeding (Fazel *et al*., 2007; Aouad *et al*., 2001).

Although this surgery is acceptable as an outpatient operation, it is not accepted generally yet (Chiang *et al*., 1968; Maniglia *et al*., 1989; Colclasure and Graham, 1990).

Three common complications that due to delayed hospital discharge in patients were bleeding vomiting and enough oral intakes (Litman *et al*., 1994; Weimert *et al*., 1990; Carithers *et al*., 1987).

Use of Dexametasone to decrease PTC had confusing results (Splinter and Roberts, 1996; Ved *et al*., 1996; Volk *et al*., 1993).

In several studies preoperative single dose of Dexametasone due to reduce Postoperative Morbidity (POM) of tonsillectomy (Steward *et al*., 2001; Kaan *et al*., 2006; Fazel *et al*., 2007; Elhakim *et al*., 2003; Pappas *et al*., 1998).

This current study has tried to demonstrate the further effect of Dexametasone on operational complications in case of its continuation.

In our study, we used as the same surgical methods for all patients and two groups were matched in age, sex, surgery and anesthesia duration. Results of our study showed that in case of continuation of Dexametasone up to 24 h after operation, we had better oral intake, low pain score and low incidence of vomiting.

Although, Dexametasone hadn't more effect on patients had only nausea.

In some studies effects of Dexametasone on Postoperative Morbidity (POM) was positive (Aouad *et al*., 2001; Steward *et al*., 2003) and in the others this effect was not established (Volk *et al*., 1993; Ohlms *et al*., 1995; Catlin and Grimes, 1991).

To achieve meaningful results, should be used controlled anesthetic methods (Elhakim *et al*., 2003).

Aouad *et al*. (2001) and Pappa *et al*. (1998) in their studies showed that significant reduce of vomiting incidence in patients with usage of Dexametasone.

Splinter and Roberts also had lay stress on decrees of vomiting with use of Dexametasone (Splinter and Roberts, 1996).

Also, patients that anesthesia inducted by Propafen had low unprepared vomiting (Splinter and Roberts, 1996).

Steward *et al*. (2001) showed that administration of Dexametasone in first 24 h of post operation as compared with placebo reduce vomiting rate and 10 year experience of routine use of Dexametasone in tonsillectomy had no side effects and treatment cost was so low that it could be used routinely.

This current study was large enough from a view point of the number of the samples.

Antiemetic effects of Dexametasone could be relative to antagonism of PG[23], inhibition of serotonin[24] and releases of endorphins[25].

Post operative intravenous Dexametasone due to mode elevation, appetite irritation, antiemetic effects and or combination of these (Schimmer and Parker, 1996).

All of these due to increased oral feeding. In Steward *et al*. (2001) at study, oral feeding increased with use of Dexametasone.

In the study of Aouad *et al*. (2001) the time of first oral intake in Dexametasone group was 5.3 h and in control group was 10.9 h and were shorter in Dexametasone group compared with the control group ($p<0.05$).

Oral intake in Dexametasone group was better than control group (Kaan *et al*., 2006).

Oral feeding was better in Dexametasone group and after 2 h oral intake in Dexametasone group was significant more than control group (Schimmer and Parker, 1996) and in some study Dexametasone was effective on pain (Elhakim *et al*., 2003; Tom *et al*., 1991; Hanasono *et al*., 2004) and in some others was ineffective (April *et al*., 1996; Volk *et al*., 1993; Ohlms *et al*., 1995; Catlin and Grimes, 1991; Vosdoganis and Baines, 1999).

In tonsillectomy muscles and peripheral tissues damaged mechanical and calorific that duet to pharyngeal muscle spasm and stimulate never end point and these due to pain and swallow So, it is very important to avoid tissue damage and to support stabilizing normal

physiological mechanisms (Palme *et al*., 2000). Corticosteroids reduce inflammation and Postoperative Morbidity (POM).

In the study of Kean MN, the patients who received preoperative Dexametasone had significantly less pains score during the first 6 h post operatively ($p<0.05$) (Kaan *et al*., 2006).

Pain scores used included children hospital eastern Ontario pain scale "fased" and 0-10 visual analogue pain scale VAS is suitable for patients in age 4-5 year and Dexametasone group patients had low pain score (Kaan *et al*., 2006).

CONCLUSION

Intravenous Dexametasone administration effective in the reduce Postoperative Morbidity (POM) of tonsillectomy and continues that in first 24 h post operatively was mire effective in the reduce of Postoperative Morbidity (POM) such as pain vomiting, nausea and oral intake time Regarding the importance of the physician's assurance of the patient's sufficient nutrition and avoiding shortage of body liquids during recovery period and reporting tormenting to angina symptoms, nausea and vomiting, specially in children, it is recommended to administration intravenously administration of Dexametasone before the operation and continue up to 24 h after operation.

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