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Comparison of Diclofenac with Pethidine on the Pain after Cesarean Section

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Abstract: Pain relief of good quality after Cesarean Section (CS) results in early mobilization and good early mother-child interaction. Usually Narcotics are using for analgesia after CS pain have side effects like sedation, nausea, ileus and respiratory depression. The object of this study is the comparison of pain relief by rectal Diclofenac and intra muscular pethidine and comparison of their side effects. In a randomized single blind study 122 patients undergoing both emergency and elective CS for the first time were studied. The study group received 100 mg rectal diclofenac immediately after CS followed by 100 mg Diclofenac every 8 h for the first 24 h. The control group received 25 mg pethidine immediately after CS then 25 mg every 8 h for the first 24 h. Then the pain in 2 groups was evaluated by visual analogue score. The result showed that the visual analogue score for pain was significantly lower in diclofenac group. Incidences of vomiting and ileuses do not have any difference in two groups and was not reported early post-partum hemorrhage in any group. Rectal Diclofenac provides effective analgesia for CS pain and there was not significant difference between the 2 groups regarding incidence of vomiting and ileus.

Key words: Diclofenac, pethidine, cesarean section, pain score

INTRODUCTION

Management of the pain after Cesarean Section (CS) is very important for mother and nursing of infant and breast feeding. Post CS pain relief is usually achieved by giving centrally acting drugs such as morphine or its derivatives. The side-effects of opioids restrict their use. The most important of these sides-effects are a reduced level of consciousness, nausea and vomiting, depression of respiratory center with a risk of respiratory failure and a decrease in smooth muscle tone that leads to delayed intestinal passage and an increased risk of prolonged post-operative bowel paralysis (Hardman *et al*., 2001). Usually pain management decision is left to the nursing staff. Studies have confirmed that nurses will administer less than a quarter of the total dose of narcotic that is prescribed on as needed basis (Denovan *et al*., 1987). There are studies showing improved pain relief when non steroid anti inflammatory drugs (NSAIDs) are added to opioids for after CS pain relief (Sia *et al*., 1997; Olofsson *et al*., 2000; Lim *et al*., 2001; Rashid and Jaruid, 2001).

Diclofenac is a potent NSAID which has both analgesic and anti-inflammatory properties. The side effects of NSAIDs are toxicity for kidney especially in hypo-volemic patient, gastric side effect, allergic reaction and prolongation of bleeding time (Hardman *et al*., 2001). Although a number of study do not show any increase in hemorrhage in patients who used these drugs before and after operation (Sia *et al*., 1997; Lim *et al*., 2001; Nisson, 1995). In the most of previous studies on the use of Diclofenac following CS, it is used in combination with pethidine and has shown that use of Diclofenac reduced the amount of opioids consumed (Olofsson *et al*., 2000; Lim *et al*., 2001; Rashid and Jaruid, 2001).

The purpose of this study was to evaluate prospectively, the efficacy of using diclofenac alone in management of post CS pain and its comparison with pethidine and incidence of vomiting and ileus in two groups and evaluation of post-partum hemorrhage after use of pethidine and diclofenac.

MATERIALS AND METHODS

The trial was conducted in a 6 month period from October 2005 to April 2006 in Vali-Asre hospital of Zanjan city. One hundred and twenty two patients undergoing both elective and emergency low segment CS under

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general anesthesia for first the time was recruited in to the study. Verbal consent was obtained from all the patients. The study was approved by the hospital ethical committee.

The exclusion criteria were the presence of asthma, peptic ulcer, obesity over 20%, Coagulopathy, preeclampsy, time of CS over 1 h and use of other analgesia in 2 groups. Patients were divided randomly in to 2 groups. Study group received 100 mg rectal Diclofenac immediately after CS followed by 100 mg every 8 h for the first 24 h. The control group received 25 mg intramuscular pethidine immediately after CS followed by 25 mg every 8 h for the first 24 h. The nurse who administered visual analog score was blind to assignments. Before the operation all the patients were shown a Visual Analogue Score (VAS) and were instructed to place a mark at 4 h intervals on the 10 cm line to indicate the degree of their pain. The pain was scored an unbiased investigator according to the following: 0 = no pain, 10-40 = mild pain, 50-70 = moderate pain and 80-100 = severe pain.

Incidence of vomiting, ileus and post partum-hemorrhage was analysed in 2 groups.

Significant differences were evaluated using the unpaired Student t-test, Chi-square test and Mann-Whitney U-test. A p-values under 0.05 were significant. All analyses were performed using SPSS 11.5.

RESULTS

Of 122 women entering in to trial, there were 61 patients in diclofenac group and 58 patients were in pethidine group. Three women in pethidine group were excluded from the study, because pain did not respond to pethidine and rectal diclofenac was used instead. There was no significant difference between the 2 groups in terms of demographic and basic data (Table 1).

Table 1: Age of parturient and indication for CS

Variables	Pethidine (n = 58)	Diclofenac (n = 61)	p-value
Age (mean±SD)	26±5.2	25.69±5.8	0.62
Distoshia	25(43.1%)	17.0(27.9%)	0.08
Other indication	33(56.9%)	44.0(72.1%)	

n = Number

Table 2: Results of treatment in to two groups

Variables	Groups	n	Mean (SD)	Median	p-value
Pain in first 4 h	Diclofenac	61	62.05(30.0)	65	0.046
	Pethidine	58	71.72(29.9)	95	
Pain in second 4 h	Diclofenac	61	46.23(27.0)	25	0.002
	Pethidine	58	62.5(29.3)	65	
Pain in third 4 h	Diclofenac	61	30.16(22.7)	25	0.0005
	Pethidine	58	52.93(29.9)	65	
Pain in forth 4 h	Diclofenac	61	29.75(26.2)	25	0.002
	Pethidine	58	44.5(26.5)	25	
Pain in fifth 4 h	Diclofenac	61	17.95(21.3)	25	0.0005
	Pethidine	58	35.17(26.8)	25	
Pain in sixth 4 h	Diclofenac	61	11.64(18.2)	0	0.005
	Pethidine	58	33.71(25.4)	25	

n = Number, SD = Standard Deviation

There was difference in the median visual score in 2 groups in all visits and in Diclofenac group was less than pethidine group (Table 2).

It was not observed any significant difference between the 2 groups regarding incidence of vomiting and ileus. Post-partum hemorrhage was not reported in any groups.

DISCUSSION

Our results indicate that use of diclofenac instead of opioids reduces CS pain better than opioids. It is important to limit the need for post operatively opioids parturient because of their well documented negative side-effects such as sedation, nausea and vomiting.

Also neonates are affected negatively by opioids given to the mother. Depressed neurobehavioral scores due to accumulation of opioids and their major metabolites in colostrums and breast milk were found when opioids were given after partus using Patient Controlled Analgesia (PCA) technique. Such effects might also have negative effects on the interaction between infant and mother as well as on the new born's feeding behavior during the first few days (Wittle and Scott, 1990; Nisson *et al*., 1995).

Diclofenac, being an NASID, is thought to act via inhibiting prostaglandin synthesis hence its efficacy in post CS analgesia by the reduction of pain from uterine contraction. A centre of anti-nociceptive effect has also been postulated. Rectal diclofenac has a rapid onset of absorption although slower than that from enteric coated tablets administered orally.

Many previous studies suggested the combination of diclofenac and opioids for post-cesarean analgesia because the pain after cesarean was thought to have has two components. A visceral one (due to uterine contractions) and a somatic one (from surgical wounds) and such complex pain is often better treat multimodaly and by combining opioids with good effect on the somatic component and NSAID, against the visceral pain, pain treatment after CS becomes significantly more efficacies (Olofsson *et al*., 2000; Lim *et al*., 2001; Roseag *et al*., 1997).

In this study we used diclofenac without opioids and this group didn't need any other analgesia and control of pain in this group was better than pethidine group. Becomes diclofenac possesses anti-inflammatory, anti-edema, anti-pyretic and analgesic properties and it alone control two after CS pains.

The duration of the therapeutic effect of diclofenac is 3-4 times longer than its half life in plasma and release of pain mediating prostaglandins are inhibited

and remain so despite the decrease of the drugs plasma concentration. On the other hand the analgesic effect of pethidine is dependent on continuous stimulation of opiate receptors and the effect of a single injection generally persisting 4-6 h and Diclofenac has a longer duration of action (12-24 h) (Rashid and Jaruidi, 2000).

The risk of post partum hemorrhage in relation to NSAIDS was reported in many texts. Considering the possibility of diclofenac increase bleeding time and reduce platelet aggregation. However, Diclofenac-induced post operative bleeding is rare in clinical practice (Sia *et al*., 1997; Lim *et al*., 2001; Amboross and Frederick, 2001; Rosariarius *et al*., 1985; Power *et al*., 1990).

None of our 61 parturient in the diclofenac group had any complication due to post-surgical bleeding.

Another complicating factor is that diclofenac can not be used before delivery due to the potential risk of premature closure of the ductus arteriosus or of fetal pulmonary hypertension. NSAIDS are not readily distributed to breast milk because being weak acids are readily ionised in the range of PH of breast milk (Lim *et al*., 2001). There were no significant differences regarded in terms of the nausea, vomiting and ileus rate in two groups, because the patients received low dose pethidine in the control group.

In conclusion, suppository diclofenac enhances the analgesic quality after CS and we suggest diclofenac use for analgesia after CS instead of opioids or even a combination of them.

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REFERENCES

Amboross, M.S. and P. Frederick, 2001. A retrospective study of the effect of postoperative indomethacin suppositories on the need for narcotic analgesia in patients who had a cesarean delivery the were under regional anesthesia. Am. J. Obst. Gynecol., 184: 1544-1548.

Denovan, M., P. Dillon and L. Mcgurie, 1987. Incidence and characteristics of pain in a sample of medical surgical patients. Pain, 30: 60-70.

Hardman, J.G., L.E. Limbird and A.G. Gilman, 2001. Goodman and Gilman's the pharmacological bases therapeutics, New York: McGraw-Hill. 10th Edn., 592: 701-709.

Lim, N.L., W.H. Lo, J.L. Chog and A. Pan, 2001. Single dose diclofenac suppository reduces post cesarean PCEA requirement. Can. J. Anesth., 48: 383-386.

Nisson, E., G. Lilja, A.S. Matthiesen, A.B. Ransjo Arridsson, K. Urnas-Moberg and A.M. Widstrom, 1995. Effect of maternal pethidine on infants developing breast feedmg behavior. Act Paed., 84: 1450-1455.

Olofsson, C.I., M.H. Legeby and E.B. Nygards, 2000. Ostman K.M. Diclofenac in the treatment of pain after cesarean delivery. An opioid-saving strategy. Eur. J. Obstet. Gynecol. Reprod. Biol., 88: 143-146.

Power, I., W.A. Shambers, I.A. Greer, D. Ramage and E. Simon, 1990. Platelet function after intramuscular diclofenac. Anesthesia, 45: 916-919.

Rashid, M. and H.M. Jaruidi, 2000. The use of rectal diclofenac for post-cesarean analgesia, Saudi Med. J., 21: 145-149.

Rosariarius, M., G. Miralles, G.A. Baer and E. Palomaki, 1985. Diclofenac versus indomethacingiven as intravenous infusion: Their effect on hemodynamics and bleeding time and side effects in healthy subjects. Ann. Clin. Res., 17: 306-309.

Roseag, O.P., A.C.P. Lui, N.J. Ciccuti, P.R. Bagg, M.L. Crossan and B. Krepski, 1997. Pre-operative multi-modal pain therapy for Cesarean section: Analgesia and fitness for discharge. Can. J. Anaesth., 44: 803-809.

Sia, A.T.H., E. Thomas, J.L. Chong and C.C. Loo, 1997. Combination of suppository diclofenac and intravenous morphine in fusion in post-cesarean analgesia? Singapore Med. J., 38: 68-70.

Wittle, B. and R. Scott, 1990. Exogenous opioids in human breast milk and acute neonatal nerve behavior; a preliminary study. Anesthesinology, 73: 864-809.