CHAPTER 7

DISCUSSION, CONCLUSION AND RECOMMENDATION

Discussion

1.Intraoperative pain

1.1 NRS score

Intraoperative NRS scores in both the control group and the morphine group were more than 5 (95 % CI of the maximal scores in the control group = 6.3 - 8.2, in morphine group = 6.5 - 8.6) when the NRS scores in both lidocaine group and lidocaine plus morphine group were less than 5 (95 % CI of the maximal scores in lidocaine group = 1.4 - 4.0, in lidocaine plus morphine group = 0.4 - 2.6). It means that intraperitoneal lidocaine can decrease moderate to severe pain from intraoperative postpartum tubal ligation to mild pain or no pain.. Although these scores were rated under the influence of rescue drugs (fentanyl and ketamine) for ethical reason, both drugs were used more in both control and morphine groups.

The intraoperative pain relief in postpartum tubal ligation by using intraperitoneal lidocaine had been reported once by Cruikshank et al. in 1973 in their descriptive study that all the patients were satisfied with

this technique. [14] But their evaluation was done in the postoperative period while the patients had been given diazepam 15 mg plus alphaprodine 10 mg intraoperation. In amnesiac state, the patients might not remember intraoperative pain and postpartum patients were still at risk of pulmonary aspiration of the gastric content within 24 hours after delivery under heavy sedation. Esophageal sphincter needs 48 hours to be in full function[26]. Maternal mortality from over sedation has been reported .[27] In this study we evaluated the intraoperative pain and found that intraperitoneal lidocaine was very effective in reducing intraoperative pain either alone or in combination with intramuscular morphine .

1.2 Rescue drugs

The confirmation of the effectiveness of the intraperitoneal lidocaine was the amount of fentanyl and ketamine needed which were higher in the control and morphine groups (Table 6.3) and more patients in the control and the morphine group needed fentanyl or ketamine (Table 6.6).

1.3 Expulsion of the abdomen

When the patients had severe pain which they expressed as compression pain, they made the involuntary force to push the abdomen

out which then interrupted the process of the operation and might prolong the operative time . In this study, due to less pain, less patients in both groups with lidocaine had pulsion of the abdomen which would make the surgery easier than in the groups without lidocaine. However the surgical duration were not statistically different among the groups. This could be because the wide variation of the surgical time, which probably occurred from the difficulty of the operation itself, might mask the effect of the interruption of the surgery.

1.4 Percentage of the patients who required rescue drugs

Patients in the groups with lidocaine (III and IV) required less rescue drugs due to less pain and this made them had less side effects (vomiting, decrease oxygen saturation) than in the groups without lidocaine (I and II). The recovery room time should be shorter due to less ketamine was used but could not be proved in this study because we had to keep every patient in the recovery room for 2 hours for plasma lidocaine's detection..

2.Hemodynamic changes

By blocking sympathetic nerves, lidocaine causes vasodilatation resulted in hypotension and tachycardia. In this study, there was no evidence of hypotension and tachycardia in both groups

with lidocaine and no patient needed any medication to treat hypotension which probably due to this study that was done in all healthy, well hydrated patients which splancnic vasodilatation could be easily compensated by peripheral vasoconstriction. So closed observation should be needed in patients with suspicious of volume depletion.

3. Plasma lidocaine levels

The total dose of lidocaine used in this study was 550 mg, 400 mg. intraperitoneal instillation and 150 mg. for local skin infiltration. The maximal plasma lidocaine level in this study was 2.67 µgm / ml which was lower than 5.3µgm./ ml. as in the study of Cruikshank et al. in 1973[14] but closed to 2.2 µgm./ ml, the maximal level in the study of Deeb and brucel[16]who used 500 mg. All these levels were far below the plasma convulsive level of lidocaine which was reported to be closed to 10 µgm./ ml.[28] Drugs can be rapidly absorbed from peritoneal membrane but the plasma lidocaine concentration in these studies were low. This is probably because the absorbed lidocaine from the peritoneal cavity is metabolized by the liver before entering the systemic circulation.

4.Postoperative pain

The postoperative NRS scores rated every 3 hours for 24 hours were all lower than 5 in all groups without significant differences. The usage of paracetamol tablets within 24 hours was not significantly different between the groups. This was in accordance with Hanson and Hingson who underwent painless laparotomy with 500 - 1200 mg. of intraperitoneal lidocaine and found that the average duration of anesthesia was 45 minutes.[29] Since there was no analgesic effect in the postoperative period, the concept of preemptive analgesia could not be proved in this study.

5.Side effects

There were no specific side effects of lidocaine or morphine. Two patients in the morphine group vomited, oxygen saturation was decreased to below 95 % in few patients (1, 2,1 and 0 in gr. I, II, III, and IV respectively) and all increased to 99- 100 % within 1 minute of the oxygen supplement. Bleeding from omentum was found in 2 patients in the morphine group which was possible in difficult cases. The bleeding was easily stopped by surgical technique. There was no sign of endometritis or other pelvic infections. Only one patient had fever which disappeared in the next day. Some expected side effects such as urinary

retention or ileus from possible residual effects of intraperitoneal lidocaine was not found.

6.Cost effectiveness analysis

Although fentanyl was used more in the control group and morphine group as compared to both groups with lidocaine, the general anesthesia was not used in morphine group. The use of general anesthesia which was expensive depended not only on the severity of pain but also on the difficulty of the operation itself. Patients in lidocaine and morphine plus lidocaine groups who needed general anesthesia, the surgical times were over 45 minutes. Although the use of general anesthesia in 3, 0, 1 and 1 cases in the control, morphine, lidocaine and morphine plus lidocaine group might happen by chance, it resulted in the total cost being closed to each other. When we look at the cost per effectiveness rate, if we use intraperitoneal lidocaine, we paid less to get one percent of patients who needed no rescue drugs (NRS < 4 or having only mild to no pain). When we compared CER between group II (conventional group) and group IV (recommendation group) we paid only 25.50 Baht to get one patient having only mild to no pain which is worthwhile.

CONCLUSION

We concluded that intraperitoneal lidocaine either alone or in combination with morphine was effective in reducing intraoperative pain in postpartum tubal ligation while intramuscular morphine was not. There were no hemodynamic changes or serious side effects. Plasma lidocaine levels were far below the plasma toxic level. So intraperitoneal lidocaine is an effective, cheap and safe technique to be used for postpartum tubal ligation.

RECOMMENDATION

Intraperitoneal lidocaine instillation should be given to the patients who scheduled to have only local skin infiltration for intraoperative pain relief to decrease suffering. Due to its effectiveness and no hemodynamic changes, it should be useful for postpartum tubal ligation in the complicated obstetric patients such as heart disease with pregnancy or severe preeclampsia. Intramuscular morphine which was also an easy and cheap technique should be considered against a non statistically 10 % increase in patients without rescue drugs when combinded with intraperitoneal lidocaine. This study was done in Siriraj Hospital which postpartum tubal ligation was done by the second year residents in Obstetric and Gynaecology Department which made 1-2 cases in each

group had surgical time longer than 45 minutes. Some obstetricians commented that 80 ml. of intraperitoneal lidocaine, although its worked very well, might be too large volume. So minimal effective volume with longer duration of action of intraperitoneal instillation of local anesthetics should be found out in the further study.