

CONTROL OF POST-SURGICAL PAIN; COMPARISON BETWEEN TRAMADOL AND MEPERIDINE AFTER EMERGENCY CESAREAN SECTION

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ABSTRACT.. Introduction: There are many complications for patients with post cesarean section relative pain. So it delays in discharging or increasing in hospital stay. The objective of this study was a comparison between Tramadol and Meperidine according to pain relief or other possible complications in post cesarean section pain control. **Materials and Methods:** This study was a double blind clinical trial. It arranged for 240 parturients who scheduled for emergency cesarean section with pain after surgery in spite of spinal anesthesia. All patients were in ASA class I. They were divided randomly in two groups .Meperidine (M) and Tramadol (T) groups with 120 patients in each group. After beginning of pain in post anesthesia care unit (VAS> or = 4), in group (T) tramadol 1.5 mg/kg and in group (M) meperidine 0.5 mg/kg were injected intravenously. Apart from pain, other drug complications such as shivering, blood pressure changes, itching, nausea and vomiting, drowsiness were recorded one and two hours after injection. Data were analyzed by chi-square test. **Results:** Relative frequency rate (RFR) of 50% decrease in pain score one hour after intravenous injection was 56.7% in group (T) and 69.2% in group (M) (P = 0.054). RFR for respiratory depression after one hour was 5.8% in (M) group and 0 in (T) group (P = 0.007). RFR for nausea after one hour was 39.2% in (T) group and 23.3% in (M) group (P = 0.008). RFR for vomiting after one hour was 23.3% in (T) group and 13.3% in (M) group (P= 0.045). RFR for drowsiness after one hour was 25% in (M) group and 3.3% in (T) group (P=0.007). There was no statistically significant relationship after 2nd hour for pain relief, nausea, vomiting and drowsiness between two groups. There was no difference between two groups in RFR for shivering, blood pressure changes and itching in both two groups. **Conclusion:** This study illustrates both remedies Meperidine and Tramadol which were effective for pain relief and shivering after cesarean section. But according to high incidence of nausea and vomiting with Tramadol and more analgesic effects of Meperidine than Tramadol, administration of Meperidine is better than Tramadol after cesarean section for pain control.

Key words: meperidine, tramadol, post surgical pain, cesarean section

INTRODUCTION

Cesarean section (C/S) is one of the most popular surgeries in Iran. Postoperative pain produces adverse physiologic effects with manifestations on multiple organ systems such as: hypoventilation, atelectasis, pneumonia, stress – induced hypercoagulable state and increased incidence of deep venous thrombosis. Catecholamines released in response to pain may result in tachycardia and hypertension, which may induce myocardial ischemia in susceptible patients¹.

Proper management of postoperative pain is an effort to improve patient comfort, decrease perioperative morbidity, and decrease cost by shortening the time spent in post anesthesia care units (PACU), intensive care units (ICU), and hospitals^{1,2,3}.

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Intermittent intravenous administration of small doses of opioids is commonly used to treat acute and severe pain in the PACU and ICU where continuous nursing surveillance and monitoring are available¹.

Meperidine is a popular opioid to treat acute pain. Side effects of it are: positional hypotension, tachycardia, drowsiness and respiratory depression^{2,3}. Tramadol is a new opioid agonist which activates spinal cord pain control through decrease in norepinephrine and serotonin reabsorption. Respiratory depression in therapeutic dosage of Tramadol is low. It may be due to occupying of non opioid receptors. Other side effects of Tramadol are the same as opioids^{2,4,5,6,8,9}.

We designed this study to compare post-surgical pain relief and other side effects of these two drugs on parturients. Hope to have a better replacement in future.

MATERIALS AND METHODS

It was a double – blinded clinical trial study. The aim of this study was assessment about post surgical pain relief between two drugs Meperidine and Tramadol. This study was designed on 240 parturients who were scheduled for emergency C/S having pain after surgery. Sampling method was consecutive.

Inclusion criteria

1. They all were in ASA class I,
2. Between 15 – 40 years old,
3. Duration of surgery was less than 90 minutes
4. They all gave spinal anesthesia.

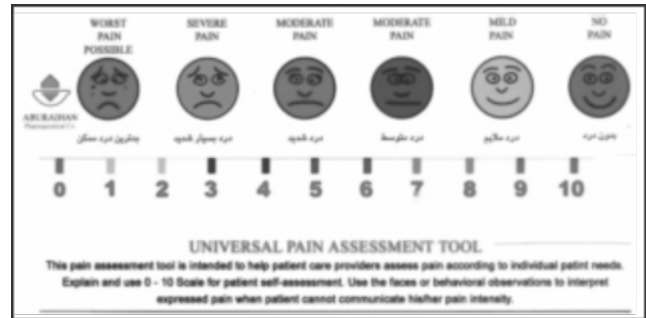
Exclusion criteria

There were no evidence of:

1. Co-existing disease ,
2. History of previous high risk anesthesia,
3. History of convulsion,
4. Opioid hypersensitivity,
5. Increase in intracranial pressure,
6. Discontinue of MAOI two weeks before surgery,
7. Pregnancy induced hypertension. Inclusive cases divided in two groups: (M) Meperidine and (T) Tramadol randomly. Visual analogue scale

(VAS) were described to patients to determine the pain score before surgery (by slide ruler from 0 – 10).

Then parturient's age, height and weight were



determined. Vital signs were controlled and if there were any contraindication for spinal anesthesia, an 18 gauge intravenous catheter was inserted. All patients were prehydrated with 7 – 10ml/kg crystalloid. Spinal anesthesia was given in sitting position with a 25 gauge spinal needle. Lidocaine 60 – 80 mg from 5% hyperbaric solution was injected in to subarachnoid space according to parturient's height in order to achieve a T4 – T6 sensory level. Then patients were placed in supine position. Vital signs were controlled at 2 minutes interval for first 20 minutes and at 5 minutes interval after that. Complementary nasal oxygen 4 – 6 lit/min was used for patients. Hypotension (systolic BP < 90 mmHg) was restored by increasing crystalloid infusion and ephedrine.

Bradycardia (HR < 60 beats/min) was cured by atropine. In the post anesthesia care unit (PACU) if patients had complaint of pain (VAS > or = 4), they had to select a card randomly (for T or M group). Then vital signs were recorded by PACU nurses and then medications were injected intravenously. In Tramadol group, Tramadol 1.5 mg/kg was injected and if there was any remainder pain after 10 minutes 0.5 mg/kg more than first dose. In Meperidine group at first 0.5 mg/kg Meperidine was injected and if there was any complaint of pain after 10 minutes 0.25 mg/kg Meperidine was injected thereafter. All drugs were prepared in 5 ml volume and were injected during 5 minutes.

In addition to record of pain score, other side effects of

drugs such as shivering, itching, nausea, vomiting and drowsiness were recorded after one hour and then two hours of injection too.

Data were analyzed by SPSS-10, Chi – square test. P value < 0.05 was statistically significant.

MURAL AFFAIRS

Drugs which were used had essential confirmation, in addition to general confirming to reliable textbooks of anesthesia.

They were not harmful (safe) for patients. Indeed before surgery research plan was described for parturients and then if they were agreed with plan test moral have been taken.

RESULTS

Our study was done on 240 patients who had acute pain after emergency cesarean section. Patients were divided in two groups with 120 cases in each group. Parturients characteristics such as sexuality, anesthetic method and anesthetic drugs were similar for all of them.

Results were shown that relative frequency rate (RFR) for 50% decrease in pain score, 1 hour after intravenous injection was 56.7% in group T (68 cases) and 69.2% in group M (83 cases). There was a significant statistical relationship. (P= 0.045). After 2 hours it was 69.2% in group T (83 cases) and 78.3% in group M (94 cases). There wasn't any significant analytical relationship (P= 0.107).

RFR for shivering after surgery had not obvious difference between 1 hour and 2 hours after injection. There was no significant statistical relationship between them. RFR for respiratory depression after one hour was 5.8% in group M (7 cases) and nothing in group T. There was a significant statistical relationship. (P= 0.007)

RFR for nausea after one hour was 39.2% in group T (47 cases) and 23.3% in group M (28 cases). There was a significant relationship. (P=0.008)

RFR for vomiting after one hour was 23.3% in group T (28

cases) and 13.3% in group M (16 cases). There was a significant statistical relationship in RFR for nausea and vomiting 2 hours after drug injection. (P= 0.007 and P= 0.038 retrospectively)

RFR for drowsiness after one hour was 25% in group M (30 cases) and 3.3% in group T (4 cases). There was a significant statistical relationship. (P= 0.000)

Table-I. Relative frequency rate of 50% decrease in pain score after 1st hour and 2nd hour of drug injection.

Time of injection / Drug	1st Hour	2nd Hour
Meperidine	83(69.2%)	94(78.3%)
Tramadol	68(56.7%)	83(69.2%)
P-value	0.045	0.107

There were no post-surgical itching or blood pressure alterations (decrease 30% of baseline) reports in both groups (Table-I, II, III).

DISCUSSION

Post – surgical pain after cesarean section is common and has a lot of complications such as anxiety, delay in discharging and increase in patient expenditure. In this study we compared analgesic effects and probable side effects of two different remedies (meperidine and tramadol) on pain control 1 and 2 hours after cesarean section. We observed that RFR of 50% decrease in pain score in meperidine group was greater than tramadol group. In previous studies there was no comparison between these two groups regarding on analgesic effects.

Mark B Bloch and his colleagues compared continuous IV infusion of Tramadol as an alternative to neuraxial or systemic opioids for management of post thoracotomy pain in a prospective, randomized, double blinded controlled study. They concluded that an intraoperative bolus of tramadol followed by an infusion was as effective as epidural morphine and avoiding the necessity of placing a thoracic epidural catheter⁵. In that study they used infusion of Tramadol before surgery and before

Table-II. Relative frequency rate of side effects of meperidine and tramadol after 1st hour of drug injection.

Side effects/ Drug	Nausea	Vomiting	BP alterations	Shivering	Respiratory depression	Itching	Drowsiness
Meperidine	28(23.3%)	16(13.3%)	-	12(10%)	7(5.8%)	-	30(25%)
Tramadol	47(39.2%)	28(23.3%)	-	11(9.2%)	-	-	4(3.3%)
P-value	0.008	0.045	-	0.826	0.007	-	0.000

Table-III. Relative frequency rate of side effects of meperidine and tramadol after 2nd hour of drug injection.

Side effects/ Drug	Nausea	Vomiting	Blood pressure alterations	Shivering	Respiratory depression	Itching	Drowsiness
Meperidine	11(9.2%)	4(3.3%)	-	6(2.5%)	2(1.7%)	-	-
Tramadol	26(21.7%)	12(10%)	-	3(5%)	-	-	-
P-value	0.007	0.038	-	0.308	0.156	-	-

pain, but we used bolus dose of Tramadol at the beginning of pain. In infusion method both IV complications and patients need were lesser than other methods.

It explained that brief difference in this study with authors. In 2002 Michael vergin and his colleagues arranged a study for post traumatic pain relief. In that study Tramadol was an alternative to morphine⁶. They used Tramadol before pain was started, but we used it after starting of pain. In addition they compared Tramadol with Morphine but we compared Tramadol with Meperidine. In our study there was a significant statistical relationship for respiratory depression. After both remedies in Tramadol group there was no respiratory depression. This result is coincided alike with on Tramadol and Morphine in Michael vergin study(6) and Juliae Tinol study, she used tablet of Tramadol and intravenous Morphine in children⁴. Tarkittle P Touminum's study. He used Tramadol and Meperidine in children⁸ in all studies, Tramadol has led to lesser or no respiratory depression than other drugs.

In our study nausea and vomiting in group T were greater than group M. This amount has been greater than above mentioned studies^{4,6,8}. This difference may be caused by some items like; female sexuality, pregnancy, or emergency surgeries in our study, because pregnancy

and emergency surgeries can lead to delay in stomach emptying so the risk of nausea and vomiting will be increased easily. As can be seen, other studies can be done on men, women and children during elective surgeries.

In our study in group M drowsiness was greater than group T. It coincided with Tsao and Yo – chaun studies⁹. There were no significant statistical relationship with meperidine and tramadol about shivering in our study. It coincided with Tsao and Yo– chaun results⁹. There was no change in blood pressure in our study. No itching was observed which coincides with previous studies^{4,5,6,8,9}.

CONCLUSION

This study illustrates both two remedies Meperidine and Tramadol which were effective for pain relief and shivering after cesarean section. But according to high incidence of nausea and vomiting with Tramadol and more analgesic effects of Meperidine than Tramadol, administration of Meperidine is better than Tramadol after cesarean section for pain control.

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