Spinal Anesthesia with Pentazocine for Total Abdominal Hysterectomy

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Intraspinal pentazocine, 1.5 mg/kg, produced sufficient analgesia and moter block in 50 cases of abdominal total hysterectomy. Pentazocine, a derivative of benzomorphans, shares some common characteristics with local anesthetics in the chemical structure. Both agents have an aromatic ring and an intermediate chain, in common, which connects the former to nitrogen moiety, and the local anesthetic action was anticipated.

The onset of the sensory block was 3.2 ± 0.9 (mean ± SD) min, and the maximum level was T10 and T4 with mean level of T6.

The onset of motor weakness at the knee was 4.1 ± 1.9 min, and the duration was 108 ± 10.5 min. (Key words: spinal anesthesia, pentazocine, total abdominal hysterectomy)

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Meperidine, a phenylpiperidine derivative, has some structural similarity with local anesthetics and has been used for spinal anesthesia[1].

In 1983, epidural pentazocine for postoperative pain relief was reported by Kalia PK et al[2].

Pentazocine, a derivative of benzomorphane, also shares some common characteristics with local anesthetics in the chemical structure.

The present study was undertaken to evaluate the efficiency of intraspinal pentazocine for the surgical anesthesia.

Methods

Fifty women patients with uterine myoma were selected.

The mean age was 47 ± 7.1 years and the mean height was 157 ± 12 cm. Meperidine 1.5 mg/kg and hydroxyzine 1.0 mg/kg were injected intramuscularly one hour before surgery for premedication.

Spinal tapping was done with spinal needle, 25 gauge, in a sitting position at L_{2-3} interspace. Immediately after the administration of pentazocine, patients were placed in a supine position and vital signs were monitored every minute for the first thirty minutes.

The level of analgesia was measured by the pin prick test for the first 10 min, and the motor weakness was tested by requesting to lift the knees for the first ten minutes as well.

The same examinations of measuring sensory and motor block were performed during the recovery period.

Results

Immediately following the subarachnoid pentazocine administration, the patients felt a warm sensation in the lower extremities. The onset of the sensory block, by pin prick, was 3.2 ± 0.9 minutes and the maximum level varied between T10 and T4 with a mean level of T6. The onset of motor

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weakness at the knee joint was 4.1 ± 1.9 minutes and its duration was 108 ± 10.5 minutes.

Of the fifty patients, three (6%) showed significant decrease in mean arterial pressure, over 20 mmHg, within five minutes after the drug administration. Two patients (4%) showed the similar hypotention within ten minutes. The hypotension was easily corrected by ephedrine and fluid replacement.

One patient complained of mild frontal headache and another patient complained of slight neck stiffness, both of which disappeared without management on the second postoperative day. Mild voiding difficulty was observed in eight patients (16%) after the removal of Foley catheter. These were, however, relieved mostly with voiding effort.

One patient who was placed in a extremely steep Trendelenburg position, showed mild respiratory depression. It was immediately relieved with 100% oxygen by face mask for about ten minutes and was considered to be caused by the positioning. One patient developed sinus bradycardia, which was relieved with glycopyrulate, 0.2 mg iv.

No neurologic sequele was observed in all patients postoperatively.

Of the total of 50 cases, 36 complained of post-operative pain.

Of the 36, 8 cases were treated with meperidine, 1 mg/kg im, three time per day for two days, and the remaining with the same dose of meperidine once or twice.

The remaining fourteen cases complained of absolutely no pain postoperatively. None complained of pruritus.

Table 1. Complications

Complications	Number of patients n = 50
Hypotension (more than 20 mmHg)	
within 5 minutes	3 (6%)
within 10 minutes	2 (4%)
Frontal headache	1 (2%)
Neck stiffness	1 (2%)
Voiding difficulty	8 (16%)
Mild respiratory depression	1 (2%)
Sinus bradycardia	1 (2%)
Pruritus	—

Discussion

Pentazocine, a benzomorphane derivative, shares some common characteristics with lidocaine in their chemical structures such as aromatic ring and intermediate chain which connectes the aromatic ring to the nitrogen moiety[3].

It is well known that the site of action of local anesthetics in spinal anesthesia is the axonal membrain of the spinal nerve roots. The site of action opioids is in the spinal cord dorsal horn especially in the substantia gelatinosa[4]. The present study indicated that the intrathecal pentazocine produced blockade of the sensory, motor and sympathetic nerves. Althouth there is no proof, such wide spectrum of action suggests that the action of intrathecal pentazocine was exerted not only as an agonist of spinal opioids recepter but also as a local anesthetic agent.

Nausea and vomiting are not rare complications of intrathecal morphine[5]. Such complication was not noted in the present study.

Pruritus, common complications of intrathecal morphine, were not seen in the present study, which indicates that the intrathecal pentazocine dose not act mainly through the opiate recepter of the spinal cord.

No respiratory depression was observed except for only one case which had very mild symptoms. These symptoms appeared for a short period and responded well to mask oxygenation.

In conclusion, intraspinal pentazocine anesthesia can be another method of regional anesthesia without serious complications for lower abdominal and extremity surgery.

The duration and effects of intraspinal pentazocine anesthesia are reliable and predictable in anesthesia practice.

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