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Case Report

ACTION ON PULSE RATE BY RELATIVE EFFICIENCY OF SPINAL AND EPIDURAL ANAESTHESIA IN LOWER ABDOMINAL SURGERY

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ABSTRACT
Spinal and epidural analgesia have advantages and disadvantages. The paper reports the effect of spinal and epidural analgesia in lower abdominal surgery on pulse rate. The study reveals that there is a fall in pulse rate in most of the cases in both the groups *i.e.,* spinal analgesia and epidural analgesia.

Key Words: *Spinal Anaesthesia, Epidural Anaesthesia Pulse Rate*

INTRODUCTION
Pain is perfect misery and worst of all evils and accessive over turns all patients. The medical profession has attempted various methods of pain relief from ancient times. Morris and Candy (1957) published paper on anaesthesia for prostatectomy. Their study suggests that if spinal analgesia carries no risk of neurological damage it would approach ideal technique as the production of analgesia is simple. Relaxation is perfect and haemorrhage is considerably reduced. Sopory *et al.,* (1977) compared the effects of spinal and epidural analgesia in prostatectomy and found that epidural analgesia is as safe as spinal analgesia for prostatectomy. Cheng (1963) discovered that the anatomical and clinical aspects of epidural analgesia and stated that the longest epidural space is in the lumbar region. Singh (1964) studied the duration of analgesia with Lignocaine, mepivacaine, bubivacaine. He found that bubivacaine has got longest duration of action. Moir (1964) published a paper on ventilatory function during epidural analgesia. The results obtained in that study demonstrate the ability of the patients with normal or diseased lungs to maintain preanaesthetic level of tidal volume and minute volume during epidural block. There was no evidence of paralysis. The objective of the present study is to study the effect of spinal and epidural analgesia on pulse rate in lower abdominal surgery.

MATERIALS AND METHODS
The present study has been observed on 140 cases admitted for lower abdominal surgery in different departments of Dr.V.M.Medical College, Solapur.70 cases were given spinal analgesia out of 70 cases of epidural analgesia 35 cases were given single shot epidural analgesia. Those patients who had high or low blood pressure and abnormality of spine or skin infection around the site of puncture were not selected for the study. Preoperative patient's history were taken and patients were examined clinically in respect to general condition, cardiovascular system, respiratory system, nervous system and local examination of spine. Investigations were done like CBC, blood sugar, blood urea, serum creatinine ECG, XRay Chest.
Institutional approval was taken.Informed consent was taken.Atropine 0.6 mg was given intramuscularly one hour before operation. Drug used for spinal and epidural analgesia was bupivacaine hydrochloride 0.5 percent (heavy) and 1.5% xylocaine+ 0.5 percent bupivacaine respectively.
Materials used for the study were Amp of 0.5% Bupivacaine; Vial of 2% Xylocaine (Preservative free); Vial of 0.5% bupivacaine (Preservative free); Water for injection; Autoclaved 24, 25 gauge spinal needles with stylet; Autoclaved 18, 19 gauge Tuohy needles with stylet; Autoclaved 2, 5, 10, 20 ml syringes with needles; Autoclaved 16, 18 guage needles; Sterilized epidural catheter; Dressing material.
Before starting the procedure the following are kept ready-
1) Vasopressors like mephentine

2) Injection Sodium Pentothal and Scoline
3) Boyle's apparatus

RL solution drip was started. Patients were explained about the steps of the procedure to secure patient's co-operation at the time of injection. Full aseptic precautions are taken for each case. Pulse blood pressure of patient was noted. All the punctures were done in lateral position. The patient was positioned at the edge of the table and parallel to it, knees flexed into abdomen, head brought down to knee and hips and shoulder vertical to the table. Site of puncture was selected (L2.3 or L3.4 interspace). A wheal of 2% xylocaine was made in the skin at the selected interspace in case of epidural analgesia.

In spinal analgesia a 5 cc syringe was loaded with 0.5% bupivacaine and was kept ready for use. Skin punctured by spinal needle and was pushed forward parallel to floor and at right angle to the back with its bevel in a plane to separate and not to divide the longitudinal fibres of dura. Puncture of the dura was recognised by loss of resistance followed by a free flow of C.S.F after withdrawal of stylet. Then the syringe loaded with 0.5% bupivacaine was fitted into the hub of the spinal needle and C.S.F withdrawn to confirm the free flow of C.S.F 3.5 cc of 0.5% bupivacaine was injected and needle then withdrawn out.

In epidural analgesia wheal was punctured by 18 or 19 gauge Tuohy needle. Syringe containing distilled water was attached to hub of Tuohy needle. The needle was pushed as described above till it reached epidural space. Two tests were applied to confirm that Tuohy needle was in the epidural space.

a) Sudden loss of resistance as the needle leaves the dense ligamentum flavum and b) Sudden indrawing of distilled water from the syringe due to negative pressure in epidural space.

As soon as the needle reached into the epidural space, the syringe containing distilled water was detached from the hub and 2% Xylocaine 2 cc injected through the needle as a test dose. After confirming that needle is not intrathecally 20, 25 cc of 0.5% bupivacaine injected according to the nature of operation. Then the needle was taken out and the site of puncture was sealed with tincture of benzoin.

In case of continuous epidural anaesthesia, catheter was passed through the tuohy needle upto 20cm mark. Then Tuohy needle was taken out and catheter withdrawn so that catheter was not more than 5 cm in the epidural space. Initially 1.5% xylocaine 20 cc was injected ,top up doses of 0.5% bupivacaine were given through the catheter which was strapped to the back of the patient.

In both the processes the patient was turned into supine position and kept in flat supine position and test for loss of sensation and power was done. When the tests became positive the surgeon was asked to start operation.

Onset of Analgesia

Immediately on injecting the drug, time was noted and patient was pricked every 30 second to test loss of sensation. Time was noted at the loss of sensation.

After noting this patient was tested for the level of loss of sensation by pin prick method. Pulse, blood pressure were recorded just after analgesia and then every 5 minutes.

Surgeon was asked about the muscle relaxation.

Duration of Analgesia

Patient was tested for the level of analgesia every 15 min and when level fell down by 3 dermatomes, the time considered as the duration of analgesia Postoperatively patient was tested for muscle power, reflexes and sensation every 10 min and time was noted for the complete return of reflexes.

Postoperative Assessment

All these patients are followed up postoperatively for 10 days or till discharge, whichever was earlier. Each day they were asked for the presence of headache, tingling numbness, muscle weakness incontinence and backache.

RESULTS AND DISCUSSION

In the Present study 140 patients undergoing various surgical and gynecological procedures subjected to spinal and epidural anesthesia are considered.

Table 1: Shows the change in pulse rate 10 minutes after injection of local anaesthetic

Change in Pulse Rate / Minute	Spinal Anaesth No. of Cases %		Epidural Anaesth No. of Cases %	
Rise in pulse rate	09	12.86	13	18.57
Fall in pulse rate	40	57.14	34	48.57
No Change in pulse rate	21	30.00	23	32.86

Thus most of the patients showed fall in pulse rate in spinal as well as epidural anaesthesia

Table 2: Shows the change in pulse rate at the end of operation

Change in Pulse Rate / Minute	Spinal Anaesth no. of Cases %		Epidural Anaesth no. of Cases %	
Rise in pulse rate	29	41.43	26	37.14
Fall in pulse rate	11	15.71	13	18.57
No change in pulse rate	30	42.86	31	44.29

The age of the patients in both groups ranged from 15 to 73 yrs. Patients are of both sexes

Every patient was premedicated with intramuscular atropine sulphate 0.6 mg. No analgesic or sedative premedication was given to avoid influence on assessment of analgesia.

In the present study fall in pulse rate in both the groups is noted. There is fall in pulse rate in 57.14% cases in spinal and 48.57% cases in epidural anaesthesia 12.86% cases in spinal and 18.57% cases in epidural showed rise in pulse rate. There is no change in pulse rate in 30% cases in spinal and 32.86% cases in epidural anaesthesia. Thus there is fall in pulse rate in most of the cases in both the groups (Table 1 and 2).

The slowing of pulse rate is caused by either a high extent of block affecting the cardioaccelerator sympathetic fibres or lowering of the blood pressure in the right atrium. Tachycardia may be attributed to Marey's law (A pulse of low tension is fast).

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