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Original Research Article

TO STUDY THE EFFECT OF INTRATHECAL DEXMEDETOMIDINE ON HAEMODYNAMIC PARAMETERS.

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Abstract

Background & Methods: The aim of the study is to study the effect of intrathecal dexmedetomidine on haemodynamic parameters. Patients were shifted to operating room. Intravenous lines were secured and preloading was done using Ringer lactate solution, 15 ml/kg. Inj. Ondansetron 4 mg and Inj. Ranitidine 50 mg was given to all patients intravenously.

Results: Mean duration of sensory and motor block was quite prolonged in group A patients. The results were statistically highly significant (P<0.001)

Conclusion: The patients of both groups were demographically comparable. After obtaining written informed consent, premedication and preloading with intravenous ringer lactate, patients were induced using 23 or 25 G quincke type spinal needle in sitting position under full aseptic precautions. All patients were monitored in the same way throughout surgery and postoperatively. Onset and duration of sensory and motor block, haemodynamic parameters and sedation level was recorded at regular intervals.

Keywords: effect, intrathecal, dexmedetomidine & haemodynamic.

Study Design: Observational Study.

1. Introduction

Posterior surface of vertebral column presents the spinous process of vertebra in the median plane[1]. In the cervical and lumbar region, the spinous processes are separated by considerable distance and are bifid in former with exception of spine of seventh cervical vertebra. In the thoracic region spinous processes are closely approximated[2].

The vertebral grooves are present on either side of the spinous processes lodge the deep muscles of back. The lateral surface of vertebral column is separated from posterior surface

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by articular processes in cervical and lumbar region and by transverse process in the thoracic region[3].

The lateral surface is formed by sides of bodies of vertebrae, in the thoracic region the surface marked by facets for articulation with ribs. The inter vertebral foramen are placed behind the bodies and between the pedicles, oval in shape and smallest in the cervical and upper thoracic region, and gradually increases in size up to the lumbar region. They transmit the spinal nerves and vessels[4].

The vertebral column is situated in median plane, at the posterior part of trunk[5]. Its length in an average adult male is about 70 centimetres, of which cervical spine is about 12 centimetres, the thoracic about 28 centimetres and lumbar spine about 18 centimetres in length. The sacrum and coccyx measure about 12 centimetres. In average adult female, the length of spine (vertebral column) is about 60 centimetres.

2. Material and Methods

The study comprised of 160 patients who were posted in the routine theatre list for lower limb surgeries. All patients received inj. Glycopyrrolate 0.2 mg intramuscularly half an hour before surgery. Patients were shifted to operating room. Intravenous lines were secured and preloading was done using Ringer lactate solution, 15 ml/kg. Inj. Ondansetron 4 mg and Inj. Ranitidine 50 mg was given to all patients intravenously.

INCLUSION CRITERIA-

1. 20-50 year's old patients of either sex
2. ASA grade I and II

EXCLUSION CRITERIA-

1. Age less than 20 years.
2. Height less than 150 cm

3. Result

TABLE 1: SEX DISTRIBUTION

SEX	GROUP A	GROUP B
MALE	58	56
FEMALE	22	24

In group A there were 58 male patients while in group B there were 56 male patients. Number of Female in Group A was 22 and in Group B was 24.

TABLE 2: MEAN DURATION OF BLOCKS (IN MINUTES)

	GROUP A	GROUP B	P VALUE
SENSORY BLOCK	221.2 ±2.92	123.02 ±2.78	<0.001
MOTOR BLOCK	212.2 ±3.71	215.3 ±8.916	<0.001

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Mean duration of sensory and motor block was quite prolonged in group A patients. The results were statistically highly significant (P<0.001)

Side Effects	Group A	Group B	P VALUE
Nausea-vomiting	06	08	>0.005
Bradycardia	06	06	>0.005
Hypotension	08	06	>0.005
Sedation	00	00	>0.005
Itching	00	00	>0.005
Respiratory depression	00	00	>0.005
Dry mouth	04	02	>0.005
Shivering	08	12	>0.005

TABLE 3: SIDE EFFECTS

4. Discussion

Various animal studies have been conducted in rats, rabbits, dogs and sheep using intrathecal Dexmedetomidine at a dose range of 2.5 to 100 mcg without any neurological deficit. In human beings, studies using epidural Dexmedetomidine have been conducted without any neurological deficit. Intrathecal Dexmedetomidine has been studied in humans along with bupivacaine without any neurological complication[6].

Intrathecal small dose of Dexmedetomidine (3mcg) used in combination with Bupivacaine in human have shown to produce a quicker onset and prolongation of sensory and motor block without causing sedation, while haemodynamic parameters are well stable[7].

Al- Ghanem et al., in 2006 concluded that 5 mcg Dexmedetomidine is a good adjuvant to spinal Bupivacaine, to produce prolonged block and excellent quality analgesia with minimal side effects.

In our study, we compared the intrathecal isobaric ropivacaine (0.75%) alone with intrathecal isobaric ropivacaine (0.75%) and Dexmedetomidine (3 mcg) for lower limb orthopaedic surgeries.

Kalso EA et al. in 1991 reported a 1:10 dose ratio between Dexmedetomidine and clonidine to produce similar effects intrathecally[8].

De Kock et al. in 2001 concluded that small doses of clonidine (15 & 45 mcg) given intrathecally significantly improve the quality of spinal anaesthesia. From these studies, we concluded that 3 mcg Dexmedetomidine would be safe and appropriate for this study. This study was a double blinded randomized clinical study[9]. Patients were randomly allocated in to two groups on the basis of computer generated numbers.

5. Conclusion

The patients of both groups were demographically comparable. After obtaining written informed consent, premedication and preloading with intravenous ringer lactate, patients

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were induced using 23 or 25 G quincke type spinal needle in sitting position under full aseptic precautions.

All patients were monitored in the same way throughout surgery and postoperatively. Onset and duration of sensory and motor block, haemodynamic parameters and sedation level was recorded at regular intervals.

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