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A COMPARATIVE ANALYSIS OF SPINAL LIGNOCAINE VS CINCHOCAINE

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INTRODUCTION

Spinal anaesthesia is one of the regional techniques commonly used in the anaesthesia practice. Injecting small amounts of local anesthetics into the cerebrospinal fluid (CSF) induces spinal anaesthesia. Spinal anaesthesia is easy to perform and has the potential to provide excellent operating conditions for surgery below the umbilicus[1].

Various drugs are used in spinal anesthesia. Each drug has its own advantages and disadvantages. No drug has been found to fulfill the criteria of an ideal agent for spinal anaesthesia. However certain drugs are preferred by the practicing anesthetists for providing adequate circumstances for surgery. Cinchocaine has been a well tried and a very useful agent for intrathecal block with great satisfaction. However, other agents like Lignocaine, are also extensively used for spinal block[2].

This study will compare effects of both these drugs in intrathecal block, keeping in view their cost, availability, systemic effects, duration and the state of analgesia. Trans-urethral resection of prostate is (TURP) the commonest procedure performed in old patients and the anaesthesia provided for this purpose is usually in the form of spinal block. In this study we have compared two drugs for this purpose, lignocaine and cinchocaine.

HISTORICAL BACKGROUND

J. Leanard Corning (1855-1923) New York neurologist performed first spinal anaesthesia in 1885. He accidentally pierced the dura while experimenting with cocaine on the spinal nerves of a dog. Later he deliberately repeated the intradural injections, called it spinal anaesthesia and suggested it might be used in surgery.

According to him, "Be the destiny of this observation what it may, it has seemed to me, on the whole, worth recording"[3].

This failed to influence his contemporaries. He wrote first book on local analgesia in 1886. Lumbar puncture was standardised by a simple clinical procedure by Heirich Irenaeus Quincke (1842-1922) of Kiel in Germany in 1891 and by Essex Wynter (1860-1945) in England in the same year.

First planned spinal analgesia for surgery in man was performed by August Bier (1861-1949) on 16 August 1898 in Kiel when he injected 3 ml of 0.5% cocaine solution into a 34 year old labourer. After using it on 6 patients he and his assistant each injected cocaine into the other's theca. They advised it for operation on legs, but gave it up owing to toxicity of cocaine. Later on it was extended to external genitals and the abdomen. The adrenaline was used to increase the duration and reduce toxicity of spinal analgesia in 1903.

Lignocaine was synthesised by Lofgren and Lundoist in 1943 in Sweden and was first used by Gordh in 1948. Cinchocaine is not used now a days in developed countries but is still being used in developing countries. Lignocaine is one of the common drugs for spinal blockade of short duration.

MATERIAL AND METHODS

Patient Selection.

A total number of fifty elderly patients, ages between 55-75 year, due for elective trans-urethral resection of prostate were studied for a comparison between intrathecal lignocaine plain 2% versus cinchocaine 0.5% regarding intensity and duration of the block; and

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haemodynamic changes (pulse rate and blood pressure) during the procedure. The patients were divided into two groups according to the drug administered as:

GROUP - I: 25 patients were given 2ml of lidocaine plain 2% (isobaric) intrathecally.

GROUP-II: 25 patients were given 1.5 ml of Cinchocaine 0.5% (hyperbaric) intrathecally.

Inclusion Criteria: ASA-I to III patients for TURP

EXCLUSION CRITERIA:

ASA-IV, bedridden, haemodynamically unstable patients and those with an absolute contraindication for spinal block were excluded.

ANAESTHETIC TECHNIQUE:

Patients did not receive any premedication and no supplemental sedatives or opioids were administered during surgery. In both the groups the block was administered to the patients in sitting position under strict aseptic conditions through a median approach using a 25 gauge disposable spinal needle. Intrathecal injections were given at level of L 4-5 space in both the groups. The patients were placed in supine position to achieve the level of analgesia upto L1. The level of sensory blockade was determined by pinprick method and motor blockade by using Bromage Scale. The level of sensory block was reassessed after every 10minutes.

CLINICAL MONITORING:

Ringer lactate solution was administered at a rate of 4-6 ml/kg/hour. Heart rate and blood pressure were recorded after every 10 minutes by using DINAMAP monitor. Blood loss was replaced by Haemaccel infusion as a plasma substitute, 1ml Haemaccel for 1ml of estimated loss of blood.

Electrocardiography and pulse oximetery was done to continuously monitor the patients so as to detect pulmonary oedema early from absorption of irrigation fluid.

Packed cell volume was transfused in massive blood loss.

Verbal contact with the patients was maintained throughout to assess neurological changes.

RESULTS

Group - I.

In all 25 patients, the onset of block started in 10-18 seconds and was complete in 2-3 minutes. These patients remained stable haemodynamically; Heart rate and blood pressure were affected very little. Out of 25 patients one patient started shivering in immediate postoperative period, he developed tachycardia, shivering and his blood pressure dropped. He became stable with oxygen inhalation by facemask, rewarming and 500 ml of Haemaccel solution intravenously.

Group -II.

In all 25 patients selected for intrathecal spinal block with 0.5% cinchocaine, 22 patients experienced good anaesthesia up to the satisfaction of patients and surgeon. There was on effect in 3 patients regarding sensory or motor block. Onset of sensory block started after 20-30 seconds and was complete within 2-3 minutes.

The return of sensory of sensory blockade was noted after every 2 minutes. Time to two segments regression was noted as 120-130 minutes. Most of the patients (78%) remained stable as far as heart rate and blood pressure were concerned. In 22% of the patients there was fall in blood pressure and ephedrine 15-25 mg was used to treat hypotension.

PARAMETERS	Group I	Group II
Number of patients	25	25
Onset of sensory blockade (sec)	14:84	26:4
Level of sensory blockade	T_{12}	T_{10}
Intensity of motor blockade	1	3
Time to two segments regression (min)	55	124
Failure of blockade	0	3
Complications observed number of patients.	1	5

Comparison Between Group-I and Group-II

STATISTICALANALYSIS.

Means and Standard Deviations were used to compare onset of sensory block, intensity and duration of block, heart rate and blood pressure.

DISCUSSION

Spinal anaesthesia is widely used for the medically compromised patients.[4] These individuals mostly belong to old age group, usually presenting for prostatectomy. TURP is done in spinal anaesthesia and various drugs are used for this purpose. Each drug has its advantages and disadvantages. Out of these drugs, lignocaine and cinchocaine are two commonly used drugs. Cinchocaine, is not used now a days[5] but was very much popular as a spinal anaesthetic agent.

Lignocaine is useful for procedures that can be completed in 1 hour or less[6] and is most commonly used as 5% solution in 7.5% dextrose. In my study I used lignocaine 2% for spinal block[7] and compared the intensity, duration of block, pulse and blood pressure with cinchocaine 0.5%.

The lignocaine in my study produced intense block of rapid onset (14.84sec) with less haemodynamic changes. This correlates with the study carried out by Pierre Maurette MD, et al[8] who described less haemodynamic changes when lignocaine was used. This, however, can increase the duration and quality of block.[9] However I used plain lignocaine. Complications after lignocaine are less and it has shown to improve the spinal cord blood flow, acknowledged by Kozody R, Swartz et. al (1985).[10] The extent of hypotension seen with cinchocaine was more and of almost sudden onset but as studied by Kety et al.[11] the decrease in blood pressure was related to the level of blockade achieved. There was profound fall in blood pressure when the level of block was high because of more sympathetic blockade. A level of T10 is usually considered safe. When the duration of blockade and 2 segments regression of cinchocaine were compared with lignocaine, the former definitely has clear advantages. The duration of blockade is more in case of cinchocine. Keeping in view the toxicity of the cinchocaine[12] relative to its advantages, it is not a safe drug for spinal blockade especially in haemodynamically compromised patients.

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