



RESEARCH ARTICLE

HEMODYNAMIC CHANGES IN LOW DOSE INTRATHECAL DEXMEDETOMIDINE AND CLONIDINE AS ADJUVANT TO BUPIVACAINE - A COMPARATIVE STUDY

Dr. Chayan Sarkar¹, Dr. Sudha Jain², Dr. Sucheta Tidke³ and Dr. Moumita Debnath⁴

1. Senior Resident, Dept of Paediatrics, Tripura Medical College, Hapania, Tripura.
2. Assoc Professor, Dept of Anaesthesiology, Mahatma Gandhi Institute of Medical Sciences, Sewagram, Wardha, Maharashtra.
3. Professor and HOD, Dept of Paediatrics, Mahatma Gandhi Institute of Medical Sciences, Sewagram, Wardha, Maharashtra.
4. Junior Resident, Dept of Biochemistry, Agartala Government Medical College, Agartala, Tripura.

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Abstract

Background : To evaluate the effect of low dose intrathecal dexmedetomidine and clonidine as adjuvant to bupivacaine on hemodynamic parameters of the patients . A total of 60 patients , scheduled for lower abdominal , lower limb and gynaecological procedures were selected to participate in this prospective , randomised double blind study . After injecting the drug time were noted (T0) and the patient were turned to supine position . Preoperative systolic and diastolic blood pressure , Heart rate were noted at specific time interval. **Results** : Heart rate , systolic blood pressure , diastolic blood pressure and mean arterial pressure were compared in both the groups and there was no statistically significant difference between the two groups . **Conclusions** : Both clonidine and dexmedetomidine as adjuvant to bupivacaine showed fall in heart rate , systolic blood pressure , diastolic blood pressure and mean arterial blood pressure . However there was no statistically significant difference between the two groups in these parameters.

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Introduction:-

Subarachnoid blockade with local anaesthetics provides intense analgesia by segmental blockade of central neural axis , but duration is limited (short lasting)

The research project will mainly focus about the additive action of 2 drugs (Clonidine or Dexmedetomidine) when administered intrathecally as adjuvant to 0.5 % Bupivacaine.

In which Dexmedetomidine is a centrally acting selective alpha 2 agonist , Dexmedetomidine has mainly alpha 2b and alpha 2c receptors when given intrathecally .(1)

Clonidine also an alpha2 adrenergic agonist has effect on characteristic of spinal block and duration of post operative analgesia when given intrathecally.(2)

Corresponding Author:- Dr. Moumita Debnath

Address:- Junior Resident, Dept of Biochemistry, Agartala Government Medical College, Agartala, Tripura.

Its successful use and advantage have been reported by various recent publications in the medical literature.

Aims and Objectives:-

To study the effect of addition of clonidine or dexmedetomidine as adjuvant to 0.5 % Bupivacaine (heavy) on heart rate , systolic blood pressure , diastolic blood pressure and mean arterial blood pressure .

Objectives:-

Following observation were recorded :

Heart rate

Systolic Blood pressure

Diastolic Blood Pressure

Mean Arterial Blood pressure

Materials And Methods:-

A total of 60 patients , scheduled for lower abdominal , lower limb and gynaecological procedures and were selected to participate in this prospective , randomised double blind study .

Approval from the institutional ethical committee and written informed consent from patients involved in this research were taken.

They were divided on the basis of computer generated random number table into two groups as follows:

GROUP 1 : That is group BD->n=30

They were administered intrathecally 3 ml of bupivacaine 0.5%(H) plus injection Dexmedetomidine 5 microgram in 0.5ml volume (diluted in normal saline).

2)GROUP 2 : That is group BC ->n=30

They were administered intrathecally 3 ml of bupivacaine 0.5 %(H) plus injection Clonidine(30 microgram) 0.5 ml volume

Selection Of Cases

Inclusion Criteria:

- 1)American society of Anaesthesiologists (ASA) physical status I/II patients
- 2)patients aged between 18-60
- 3)patients with both male and female gender
- 4)Surgeries lasting upto duration 120 minutes

Exclusion Criteria

- 1)patients not willing to take part in the study
- 2)patients with obvious contraindication to regional anaesthesia ,or sensitivity to study drugs and who were on chronic analgesic therapy
- 3)patient with major systemic illnesses like diabetics,uncontrolled hypertension,ischaemic heart disease, renal and hepatic derangements and disease of central nervous system and spine .

Anaesthesia Technique

All the patients were premedicated with oral Alprazolam (0.25 mg) and ranitidine (3 mg / kg)the night before surgery

In the operating room , standard monitors (electrocardiogram,Noninvasive blood pressure and pulse oximeter) will be attached to the patient , and baseline vitals were recorded .

An 18G intravenous line were secured and preloaded with Ringer's lactate 10 mg / kg .

Patient were randomly allocated into 2 groups in a double blinded manner .

Patients and assessing anaesthesiologists were blinded to the test drug

The drugs were administered intrathecally in sitting position in L3-L4 or L4-L5 space with a 23 gauge spinal needle. The study solution, prepared by another researcher who was not involved in the patient care, was injected through the spinal needle over a period of ten seconds with no barbotage.

After injecting the drug time was noted (T0) and the patient was turned to supine position

Following observation were recorded :

Pulse rate and blood pressure was monitored every 5 minutes intraoperatively and every ten minutes subsequently till 2 segment regression of block.

Hypotension (>20% decrease in systolic blood pressure from baseline) was managed with intravenous fluid (20 ml/kg) initially and then with mephentermine 3 mg in incremental boluses.

Adverse effects such as nausea, vomiting, sedation, pruritus and urinary retention were recorded.

Intraoperative rescue analgesia was administered with Ketamine intravenously, when required. If pain is not relieved, the patient was given general anaesthesia and excluded from the study.

Postoperatively, rescue analgesia medication with diclofenac sodium (1.5mg/kg) was administered intramuscularly, if VAS was found to be >5.

Dermatomal sensory block up to T10 was considered adequate for surgery. The maximum height of sensory blockade was noted at 20 minutes.

All patients were followed up after surgery, in every 2 hrs interval for post operative analgesia assessment and for any behavioral side effects, like confusion, dizziness, nystagmus, nausea, vomiting or any neurological complications.

Statistical Analysis

Statistical analysis was conducted with EPI info.

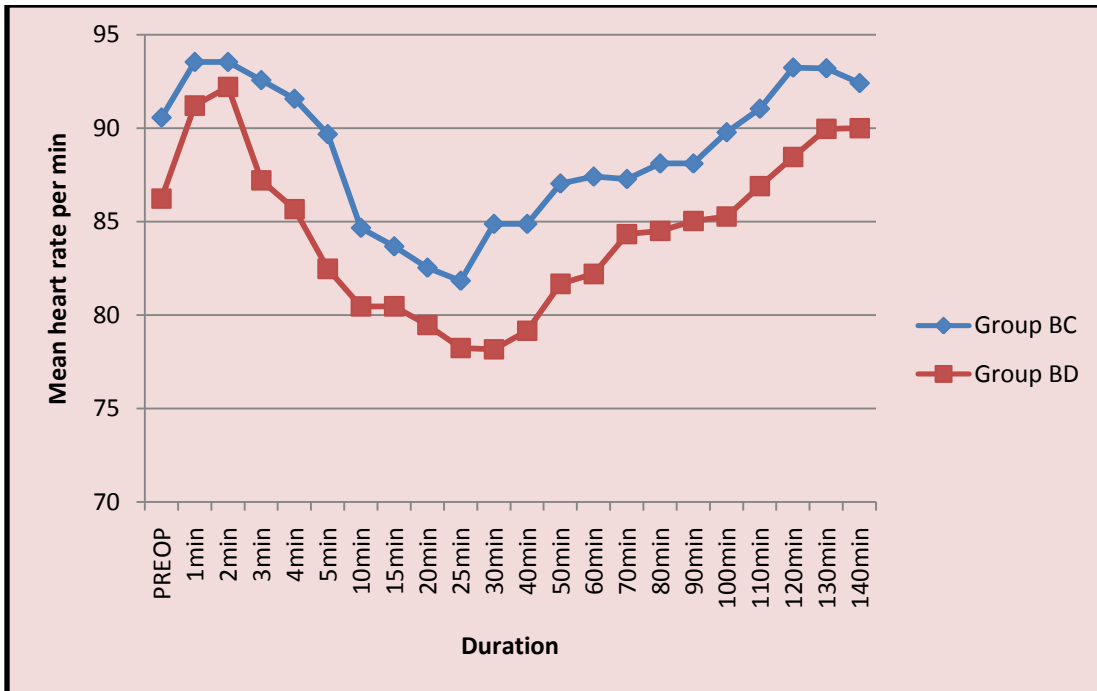
Descriptive data was presented as mean +/- SD

For all test 'f' value was presented according to f distribution table.

Results:-

Demographic data comparing age, sex, height, weight shows no statistical difference among the groups.

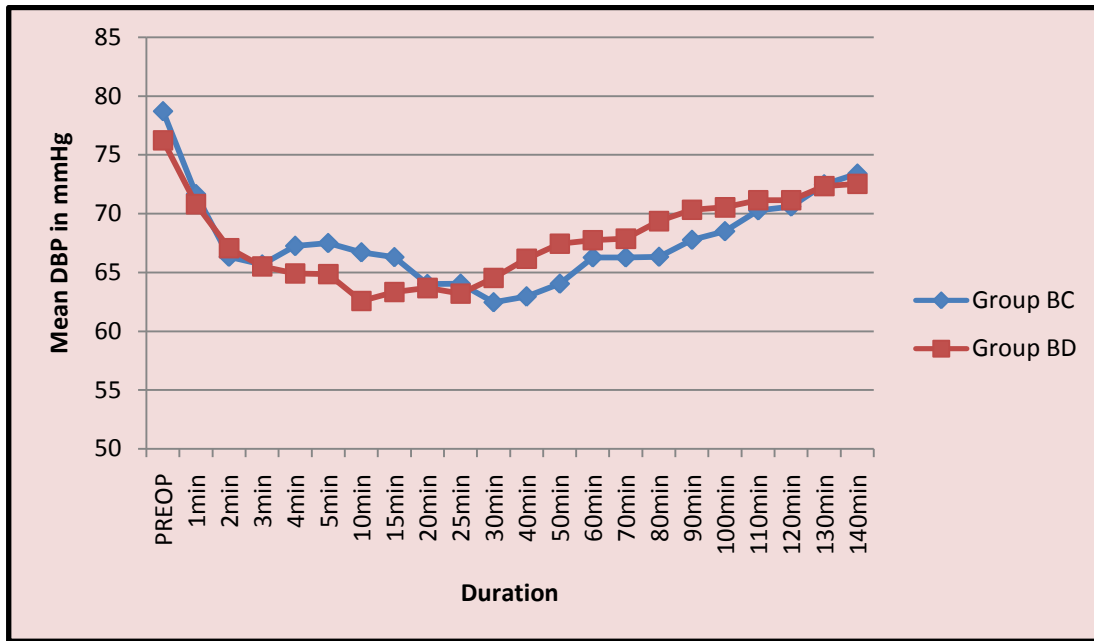
The difference in mean heart rate from basal to 140th minute recording is statistically not significant between the groups.



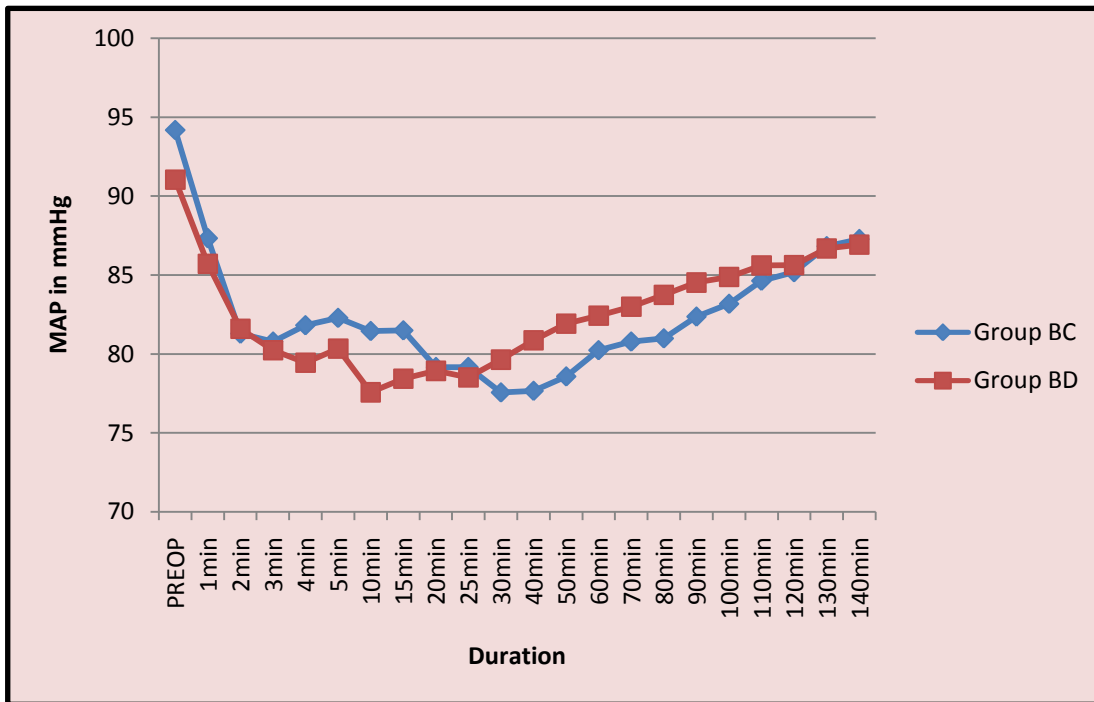
The mean SBP from preoperative to 140th minute recording is statistically not significant between group BC and group BD.



The mean DBP from preoperative to 140th minute recording is statistically not significant between group BC and group BD.



The mean MAP from preoperative to 140th minute recording is statistically not significant between group BC and group BD.



Discussion:-

There was no statistically significant difference between the two groups regarding fall in SBP, DBP and MAP. However it was found that there was a delay in maximum fall in SBP in the clonidine group compared to the dexmedetomidine group. The findings in our study was similar to the findings of Sethi BS et al (2) and Strebel S et al (3). However, hemodynamic disturbances resulting from intrathecal Alpha 2 agonists depends upon other factors like segmental site of injection, patient position, preloading and baricity of local anaesthetic employed.(4)

There was no statistically significant difference in the two groups regarding decrease in the mean heart rate. However it was found that there was a delay in maximum decrease in the mean heart rate in the clonidine group compared to the dexmedetomidine group and the control group. The findings in our study was similar to findings by Kaabachi O et al (5) and Kanazi GE et al (6) .

Conclusion:-

From the present study it can be concluded that intrathecal dexmedetomidine in the dose of 5µg or intrathecal clonidine in the dose of 50 µg along with 3 ml bupivacaine, 0.5% heavy, in patients undergoing elective lower abdominal, lower limb and gynaecological surgeries results in fall in Heart rate , systolic blood pressure , diastolic blood pressure and mean arterial blood pressure but there was no statistically significant difference in these parameters between the two groups .

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