INTRODUCTION:-
Spinal anesthesia is a well-known technique used in lower abdominal and lower limb surgery. Dexmedetomidine, an α2 agonist has been used as pre-medication and as an adjunct to general anesthesia. It decreases the inhalational anesthesia and opioid requirement during general anesthesia.

Small doses of dexmedetomidine (3 μg) used in combination with bupivacaine in spinal anesthesia produces a shorter onset of motor block and a prolongation in the duration of motor and sensory block.

We hypothesised that intravenous dexmedetomidine started after spinal anaesthesia also prolongs effect of spinal block. (1)

AIM:-
• To evaluate and compare motor and sensory effect of intrathecal Bupivacaine (hyperbaric) analgesia along with intravenous dexmedetomidine supplementation (2)
• To assess the hemodynamic changes, level of sedation and effective post operative analgesia.

MATERIAL AND METHOD:-
Following approval of the institutional Committee and obtaining written informed consent from patients, fifty patients, ASA I-II, scheduled for lower abdominal and lower limb surgery were enrolled in the study.

EXCLUSION CRITERIA:-
- Patients with history of known allergies to study drugs.
- Emergency surgeries
- Unwilling patients
- Patient having circulatory and cardiovascular failure, shock, severe anemia
- Patient on anticoagulant therapy
- Anatomical deformity of spine
- Local tissue infect

PRE-STUDY EVALUATION:-
Pre-anaesthetic evaluation of all patients consists of detailed history, clinical examination and routine investigations. Written and informed consent was taken. All patients were kept nilorally 6 hours prior to surgery. Vital signs noted in preoperative room and considered as baseline values. All procedure was explained to the patients.

PRE MEDICATION
In preoperative room, inj. ondansatron 0.1mg/kg i.v was given prior to induction. On entering operation theatre, IV line secured with 18G IV canula and pulse oximeter on non invasive blood pressure (NIBP) and ECG monitor were applied. Heart rate, systolic BP (SBP), diastolic BP (DBP) and mean arterial pressure (MAP) were recorded.

STUDY GROUP
50 patients of lower abdominal or lower limb surgery were randomly allocated into two equal groups receiving spinal analgesia with hyperbaric Bupivacaine 15 mg.

GROUP D (25 patients)
Immediately after spinal analgesia;
Each patient received i.v. loading dose of 1μg/kg dexmedetomidine over 10 min followed by maintenance dose of 0.5 μg/kg/hr till end of surgery.

GROUP C (25 patients)
Each patient received normal saline same as group D.

ANESTHESIA TECHNIQUE
Under all strict aseptic and antiseptic precaution patients in left lateral position using 23 G spinal needle was inserted in L3-L4 space via mid line approaching bupivacaine heavy 15 mg was given after free flow of clear CSF.

Patients lay down to supine position after motor blockage and loading infusion of dexemetomidine after 10 min of intrathecal injection or NS started.

MONITORING
- After performing the spinal block, the vital signs were recorded at 1, 5, 10, 15, 20, 25, 30, 45 minutes in the operation room and every 30 minutes in the Post Anesthesia Care Unit (PACU) until the patient was discharged to his ward.
- Time required to sensory level T10 sensory onset and motor blockage by modified Bromage scale.
- Time required grading 3 motor blockages, time for sensory regression to S2.
- Total duration of analgesia from sensory level T10 to first resume analgesia in min.
- Sedation was accessed by Ramsay score.
- Patients were observed for intraoperative complication as bradycardia, hypotension, sedation, shivering, nausea, vomiting, respiratory depression.
- Postoperative pain was accessed by VAS score which was explained to patients preoperatively.

Bromage criteria:-

<table>
<thead>
<tr>
<th>SCALE</th>
<th>CRITERIA</th>
<th>DEGREE BLOCK</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Free movement of legs and feet with ability to raise extended legs.</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>Inability to raise extended leg and knee flexion decreased, but full flexion of feet and ankle is present.</td>
<td>Partial (33%)</td>
</tr>
<tr>
<td>2</td>
<td>Inability to raise leg or flex knees, but flexion of ankle and feet present.</td>
<td>Partial (66%)</td>
</tr>
<tr>
<td>3</td>
<td>Inability to raise leg, flex knees or ankle or move toes.</td>
<td>Complete paralysis</td>
</tr>
</tbody>
</table>
TABLE 2: ONSET AND REGRESSION TIME IN MIN

<table>
<thead>
<tr>
<th>Onset(min)</th>
<th>Regress(min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor (Bromage 3)</td>
<td>Sensory (T10)</td>
</tr>
<tr>
<td>Group C</td>
<td>5.2±0.8</td>
</tr>
<tr>
<td>Group D</td>
<td>8±0.6</td>
</tr>
</tbody>
</table>

Time of onset of sensory and motor effect after spinal block is slightly prolonged in group D and Time to regression to S1 dermatome and Bromage scale 0, was significantly prolonged in group D in comparison with group C. The regression time to S1 in group C was 196±27.2 min and group D 290±23.4 min, the P value <0.0001. The regression time to reach the Bromage 0 scale was 214.5±26.5 min in group C and 340±24 min in group D, the P value <0.0001 (Table 2).

TABLE 3:- PER OP SEQUELE,ADVERSE REACTION AND TREATMENT.

<table>
<thead>
<tr>
<th>Group</th>
<th>Group C</th>
<th>Group D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total iv (fluid) liter</td>
<td>1.70</td>
<td>1.72</td>
</tr>
<tr>
<td>Blood Transfusion</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Additive analgesia</td>
<td>12%</td>
<td>0%</td>
</tr>
<tr>
<td>Nausea and vomiting</td>
<td>8%</td>
<td>4%</td>
</tr>
<tr>
<td>Bradycardia</td>
<td>8%</td>
<td>12%</td>
</tr>
<tr>
<td>Hypotension</td>
<td>12%</td>
<td>16%</td>
</tr>
<tr>
<td>Atropine</td>
<td>4%</td>
<td>8%</td>
</tr>
<tr>
<td>Mephenytoine</td>
<td>8%</td>
<td>8%</td>
</tr>
</tbody>
</table>

HR, MAP and level of sedation of both the groups were compared statistically. Group D showed significant decrease in HR and MAP after loading infusion of Desmedetomidine. Though there was decrease in MAP, patients were hemodynamically stable throughout the duration of surgery. Out of 25 patients in Group D, 12% patient were reported to have significant bradycardia (pulse < 60) per operatively, 1 of them required dose of Atropine (0.6mg IV) to overcome bradycardia. Out of 25 patients in group D, 16% patients had hypotension which was corrected by 1 liter of IV fluid (RL or DNS) in which 8% patients corrected with 6mg of IV mephenytoine given. Out of 16%, 9% patients required IV mephenytoine. And 4% patient required blood transfusion. However, requirement of additional analgesic was decreased in Group D. Only 4%patient was given additive analgesia inform of IV fentanyl 1µg/kg compared to 16% of Group C. Also, duration of requirement of first dose of post operative analgesic was prolonged in Group D.

DISCUSSIONS:-

1. Comparison of BP
   These graph shows that hypotensive effect of desmedetomine persists in intraoperative as well as in the postoperative period.(3) In our patients the mean arterial pressure was also decreased in the group D as well as group C and clinically was not significant

2. Comparison of HR
   The heart rate was decreased significantly in group D as compare to group C after the start of IV infusion dexmedetomidine and extended in PACU.

3. Duration of post op Analgesia

<table>
<thead>
<tr>
<th>TIME (MIN)</th>
<th>GROUP C</th>
<th>GROUP D</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-150</td>
<td>126.7±13.6</td>
<td>220±18</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>240-280</td>
<td>200±18</td>
<td>220±18</td>
<td></td>
</tr>
</tbody>
</table>

4. Level of sedation
   Level of sedation was assessed by RAMSEY score. In group C, patients were awake(scale 1-2). In group D, sedation scale range from 2-4. Maximum mean sedation score achieved 30 minutes after starting iv dexmedetomidione. The oxygen saturation was higher than 95% in all patient in the two groups either intraoperative or in PACU.

CONCLUSION:-

duration of motor-sensory block and analgesia is prolonged in group D.

- If surgery is prolonged after spinal analgesia has been given, and if it is conducted by iv dexmedetomidine, no need to give supplemented GA.
- So It is useful in which time required for surgery is unpredictable like micro vascular surgery
- Per op good sedation level is achieved, so it is advantageous in micro vascular surgery and if it is conducted by i.v. dexmedetomidine, no need to give supplemented GA.
- If surgery is prolonged after spinal analgesia has been given, and if it is conducted by iv dexmedetomidine, no need to give supplemented GA.
- So It is useful in which time required for surgery is unpredictable like micro vascular surgery
- Per op good sedation level is achieved, so it is advantageous in micro vascular surgery and if it is conducted by i.v. dexmedetomidine, no need to give supplemented GA.
piratory depression。(7)
• Post op analgesia is also prolonged, so patients lying com-
fortably post operatively。(9)
• In nutshell with IV Dexmedetomidinesupplementation to
Intrathecal bupivacaine anesthesia prolongation of sensory
and motor blockage as well as effective postoperativeanal-
gesia.

REFERENCE