To see whether Dexmedetomidine and Butraphanol reduce the administration of perioperative anaesthesia & analgesia in day care surgeries. Goal of this study was to compare Inj. Dexmedetomidine & Inj. Butorphanol with respect to time required for onset & offset of sedation, quality of intraoperative as well as postoperative analgesia & the time required for postoperative recovery.

Methods: After obtaining permission from Institutional Ethical Committee (IEC), study was conducted in 40 patients of ASA I and II divided into 2 groups A & B by computer generated random number table. Patients, in group A received inj. Dexmedetomidine 1 mcg/kg i.v and group B received inj. Butorphanol 10 mcg/kg i.v, in infusion over 10 minutes prior to induction. Induction was done with inj. Propofol i.v 2 mg/kg & maintained with 33% O2, 66%N2O & 0.6-0.8% of isoflurane with patient breathing spontaneously. Throughout the surgery the sedation and analgesia was maintained with inj. Dexmedetomidine 0.7 microgram/kg/hr in group A and with inj. Butorphanol 2 microgram/kg/hr in group B. Patients were evaluated in postoperative recovery room with help of Visual Analogue Scale (VAS) for pain, Ramsay Sedation Score & Standard Aldrete Score for recovery.

Results: Demographically, the two groups were similar. Requirement of inhalational anesthetic agents was significantly reduced in the group A (p < 0.05). VAS was significantly less (2.75 ± 0.44) in the group B after 90 min and earlier rescue analgesia was given in group A (p < 0.05). Eye opening was earlier (45.5 ± 23.61) in group A and was highly significant (p < 0.001). Postop recovery was significantly improved (9.8 ± 0.41) with dexmedetomidine group.

Conclusion: Dexmedetomidine produces better sedation and analgesia without significant adverse effects and can be used as sole sedative and analgesic for day care surgery patients with better recovery.

KEYWORDS: Dexmedetomidine, butorphanol, day care, analgesia, Ramsay Sedation Score.
sample size and power of test was confirmed and then 40 patients were divided into 2 equal groups of 20 patients each ie. Group A and group B.

- Group A: Patients were given Inj. Dexmedetomidine 1 mcg/kg body weight as loading dose and maintained on 0.7 mcg/kg body weight.
- Group B: Patients were given Inj. Butraphanol 10 mcg/kg body weight and maintained on 2 mcg/kg body weight

Methodology

Anaesthetic plan was discussed and explained to all the patients a day prior to surgery. Patients were asked for any previous history of allergy to any anaesthetic given before or any kind of medication. All patients were kept fasting overnight prior to scheduled day of operation. In operation theatre, pre-operative vitals i.e. Pulse rate, BP, oxygen saturation were recorded. 20 gauge i.v cannula was placed in situ. All patients received inj. glycopyrolate 0.004 mg per kg body weight and inj.danasteron 0.1 g per kg body weight intravenously and inj. dexmedetomidine 1 microgram /kg body weight intravenously in infusion pump over 10 minutes prior to induction of GA in group A & inj. Butraphanol 10 mcg/kg in infusion pump over 10 minutes body weight intravenously prior to induction of GA. After medication patients in both the groups were analysed for sedation using Ramsay sedation scale(4) & anxiety prior to induction.


Table 1: Ramsay scale for the assessment of the level of sedation

<table>
<thead>
<tr>
<th>LEVEL OF ACTIVITY</th>
<th>POINTS</th>
</tr>
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<tbody>
<tr>
<td>Patient anxious, agitated or restless</td>
<td>1</td>
</tr>
<tr>
<td>Patient cooperative, orientated and tranqui</td>
<td>2</td>
</tr>
<tr>
<td>Patient responding only to verbal commands</td>
<td>3</td>
</tr>
<tr>
<td>Patient with brisk response to light glabellae tap or loud auditory stimulus</td>
<td>4</td>
</tr>
<tr>
<td>Patient with sluggish response to light glabellae tap or loud auditory stimulus</td>
<td>5</td>
</tr>
<tr>
<td>Patient with no response to light glabellae tap or loud auditory stimulus</td>
<td>6</td>
</tr>
</tbody>
</table>

All the patients of group A were maintained on 0.7 mcg/kg dexmedetomidine infusion and all the patients of group B were maintained on 2 mcg/kg butorphanol infusion. Infusions were stopped 5 minutes prior to end of surgery. Following preoxygenation induction of GA was done with inj. propofol 2 mg/kg body wt. After the loss of eyelash reflex / patient in apnea patients were ventilated via face mask till the patient regains the spontaneous ventilation. Anaesthesia was maintained with 33% oxygen, 66% nitrous oxide and isoflurane (0.5% to 0.8%), with the patient breathing spontaneously. In the recovery room patient were followed up for vitals, for pain using visual analog scale(5) & standard Aldrete score[6] for recovery.

Table 2: VAS

![VAS Chart](image)

Table 3: Standard Aldrete score.

Source: Rev. bras. ter. intensiva vol.21 no.2 São Paulo Apr./June 2009

Along with this, vitals were monitored. (Pulse, BP, SPO2 and RR). The patient were followed up until the VAS was more than or equal to 5. Then the rescue analgesia will be given if required. The time will be noted and patient will be released from the study. Results in both groups will be tabulated and compared to draw the conclusion.

Parameters Recorded

1. Pre operative vitals
2. Base line vitals before premedication.
3. Vitals before induction.
4. Intra operative events (average).
5. Post operative vitals.
6. Duration of surgery
7. V.A.S score :
   - T0 – at the time of premedication: drugs to be given.
   - T1 – when patient wakes up/responds to verbal stimuli
   - T2 – when patient starts complaining of pain with V.A.S > or equal to 5 (rescue analgesia to be given)
   - T1-T2 = total duration of action
8. Ramsay sedation score.
9. Standard aldrete score for recovery.

Results:- There was no significant difference in pulse rate. There was significant fall in systolic (z = 2.55) and diastolic (z = 2.04) blood pressure in dexmedetomidine group after induction. (p< 0.05).

Requirement of inhalational anaesthetic agents was significantly reduced in the dexmedetomidine group (p < 0.05) as compared to the butorphanol group (graph 1). VAS was significantly less (2.75 ± 0.44) in the butorphanol group after 90 min and earlier rescue analgesia was given in dexmedetomidine group (p > 0.05) (graph 2). Sedation score in both the groups was similar as assessed by Ramsay sedation score. Eye opening was earlier (45.5 ± 23.61) in dexmedetomidine group as compared to the butorphanol group and was highly significant as p < 0.001 (graph 3). Recovery was significantly improved (9.8 ± 0.41) with dexmedetomidine group than butorphanol group and its p <0.001 as assessed by Standard Aldrete Score. (graph 4)
Shortened hospital stays and earlier mobilisation also reduces the risk of hospital-acquired infections and venous thromboembolism (VTE). The bulk of these patients come from specialties of ophthalmology and ENT, followed by Gynaecology and General Surgery. The other specialties only contribute a very small fraction.

In last few years, a great enthusiasm has been shown toward the use of α2 agonists in anaesthesia practice because it has been found to decrease serum catecholamine levels by up to 90%, to blunt the haemodynamic response to laryngoscopy, tracheal intubation, pneumoperitoneum and extubation, to provide sedation without respiratory depression and to decrease post-operative analgesic requirements. Whereas butorphanol is used as a pre-anesthesia adjunct, narcotic analgesic for the relief of moderate to severe migraine, postoperative, or obstetric pain. Early studies suggested that butorphanol did not produce compete respiratory depressant effects and a plateau or “ceiling effect” was observed.

In 2003, Ard et al and Nelson et al suggested that Dexmedetomidine provides sedation, analgesia, and anxiolysis with minimal effect on respiratory function during the awake craniotomy similar to sedation during natural sleep.(8)

In 2009, Wang F et al study found in a study that the butorphanol combined with intravenous morphine PCA in patients undergoing abdominal hysterectomy shows effective analgesia with sedation and fewer side effects. This study also demonstrated that the butorphanol group had analgesia superior to the physiological saline control. The study found that there were no differences between urinary catheterization of more than 24 h, first time out of bed and time to discharge to home. (9)

We choose butorphanol as drug of comparison with dexmedetomidine because the analgesic activity is 4-7 times that of morphine, 15-30 times that of pentazocine(100 and has fewer side effects than other opioids and all of them can be reversed by naloxone. The safe dose of butorphanol that can be given intravenously is 20-40 μg/kg. We have used 10 μg/kg of butorphanol in our study. The duration of analgesia after intravenous injection of 1 or 2 mg of Butorphanol lasts for 3-5 hours. (11)

Conclusion

Our study demonstrated that dexmedetomidine produces better sedation and analgesia without significant adverse effects compared to butorphanol. It can be used as sole sedative and analgesic for day care surgery patients. Patients also show better and faster recovery on usage of dexmedetomidine.

REFERENCES: