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ORIGINAL ARTICLE

Intraoperative Ramsay Sedation Score after Dexmedetomidine Infusion in Patients Undergoing Perineal Surgeries at Tertiary Care Hospital, Karachi

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ABSTRACT

Aim: To determine the intraoperative Ramsay sedation score after dexmedetomidine infusion in patients undergoing perineal surgery.
Study design: Descriptive study.
Place and duration of study: Department of Anaesthesia, JPMC, Karachi from 13th February 2021 to 13th August 2021.
Methodology: One hundred and seventy four patients who met the diagnostic criteria were enrolled.
Results: The mean age was 46.51 years with the standard deviation of ±10.87. 66 (37.9%) were male and 108 (62.1%) were female. Whereas, mean duration of surgery, Ramsay sedation score at 5 minutes, 15 minutes, 30 minutes, height, weight and BMI in our study was 1.41±0.40 hours, 1.72±0.44, 3.51±0.60, 4.57±0.62, 165.62±8.23 cm, 68.34±8.23 kg and 24.85±3.34 kg/m^2 respectively.
Conclusion: Intraoperative dexmedetomidine proved beneficial in perineal surgeries and could be served as a potent sedative drug.
Keywords: Ramsay sedation score, Anesthesia, Dexmedetomidine, Pain, Perineal surgery, Sedation

INTRODUCTION

Effective strategies should be adopted and invented to minimize the post-operative pain risks in patients. Pain followed by surgery is the most common and unpleasant side effect observed in many cases. Effective pain management during perineal surgery is the most fundamental humanitarian right of the patient[1]. Appropriate management of pain, agitation, and delirium is a cornerstone in intensive care unit especially for the mechanically ventilated patients[2,3]. Not properly settled pain and agitation issues leads to prolonged mechanical ventilation, increased incidence of delirium, length of ICU stay and self-extubation[2]. In modern times, management of pain after surgery is still the most important and problematic concerns of the paramedical staff. Patients continue to describe this unwanted event[4,5].

Patients require sedation to tolerate the tracheal tube and the ventilator, to suppress coughs, to prevent respiratory fighting during intensive care procedures and to prevent psychological complications associated with pain and anxiety. Caudal epidural block is most rigorously used approach for intra and postoperative analgesia for perineal and lower abdominal surgeries. Prolongation of analgesic effect can be achieved through various adjuvants including opioids, neostigmine, ketamine and clonidine[6-8]. Variety of sedatives has different advantages and limitations in clinical use, due to their distinct pharmacological properties. Recently, another important drug, dexmedetomidine has showed desirable results and efficacy[6,9,10].

Intravenous use of dexmedetomidine in the perioperative period has been found to decrease serum catecholamine levels by 90% to blunt the hemodynamic response to laryngoscopy, tracheal intubation, pneumoperitoneum and extubation to provide sedation without respiratory depression and to decrease post-operative analgesic requirements. An international research on perineal surgeries found mean intraoperative and post-operative sedation score to be 2.09±0.38 and 2.14±0.50 respectively[10]. A pilot was conducted to determine the intraoperative Ramsay sedation score at 5 min, 15 min and 30 minutes after dexmedetomidine infusion in patients undergoing perineal surgery and found it to be 1.34±0.47, 2.06±0.79 and 2.40±0.72 respectively.

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The purpose of this study was to determine the intraoperative Ramsay sedation score after dexmedetomidine infusion in patients undergoing perineal surgery. No local and international study is done to assess sedation score in this surgical group. Management of pain and sedation is a cornerstone in intensive care unit especially for the mechanically ventilated patients and patients undergoing perineal surgeries under spinal anesthesia. Moreover, patients experience great discomfort, anxiety and sometimes hemodynamic instability due to the exposure and lithotomy position. Data from this study would potentially offer new information to clinician from our hospital. Hence outcome of the study would be studied and implemented in the management protocols. This would help us in improving care and management of patient's care.

MATERIALS AND METHODS

This descriptive study was conducted in the Department of Anaesthesia, JPMC, Karachi from 13th February 21 to 13th August 21 and 174 patients were enrolled. This sample size was calculated using the WHO software with margin of error 7% and confidence level 95%. All patients undergoing perineal surgery, American Society of Anesthesiologists (ASA) ≤2, either gender and age 30-60 years were included. Those who have second or third degree heart block, history of use of long-term benzodiazepine, opioids, known allergy to any of the study drug, any contraindication for neuraxial blockade, arrhythmias, neurological and psychiatric disorders and chronic obstructive pulmonary disease, renal impairment, myocardial infarction, history of asthma, congestive heart failure and chronic liver disease were excluded.

Demographic data was recorded on a well-structured questionnaire. Sedation induced by the drug was recorded by using Ramsay Sedation Score. Infusion of 500ml lactated ringer' solution was injected in patients. Infusion was injected in sitting position and lumbar puncture was either performed in L4-L5 inter-space or in L3-L4 interspace. Patients made to sit in this position for 5 minutes and after that in supine position and intravenous injection dexmedetomidine (1 mcg/kg IV over 10 minutes l) was injected. Intraoperatively RSS was recorded at 5 min, after 15 minutes and after 30 minutes. Data was analyzed on SPSS-20.

RESULTS

There were 88(50.6%) and 86(49.4%) of patients in age group 30-45 years and 46-60 years. Sixty six (37.9%) were male and 108(62.1%) were female. 90(51.7%) and 84(48.3%) had duration ≤ 2 hours and > 2 hours. 66(37.9%) and 108(62.1%) had and did not have diabetes mellitus type II. 76(43.7%) and 98(56.3%) had and did not have hypertension. 58(33.3%) and 116(66.7%) had and did not have obesity. 29(16.7%) and 145(83.3%) smoked and did not smoke (Table 1).

The mean age was 46.51±10.87 years. Whereas, mean duration of surgery, Ramsay sedation score at 5 minutes, 15 minutes, 30 minutes, height, weight and BMI in our study was 1.41±0.40 hours, 1.72±0.44, 3.51±0.60, 4.57±0.62, 165.62±8.23 cm, 68.34±8.23 kg and 24.85±3.34 kg/m^2 respectively (Table 2).

Table 1: Demographic information of the patients (n=174)

Variable	No.	%
Age (years)		
30 -45	88	50.57
46 – 60	86	49.43
Gender		
Male	66	37.93
Female	108	62.07
Duration of surgery (hours)		
< 2	90	51.72
> 2	84	48.28
Type II diabetes mellitus		
Yes	66	37.93
No	108	62.07
Hypertension		
Yes	76	43.68
No	98	56.32
Obesity		
Yes	58	33.33
No	116	66.67
Smoking		
Yes	29	16.67
No	145	83.33

Table 2: Descriptive statistics (n=174)

Variable	Mean±SD
Age (years)	46.51±10.87
Duration of surgery (hours)	1.41±0.40
Ramsay sedation score at 5 min	1.72±0.44
Ramsay sedation score at 15 min	3.51±0.60
Ramsay sedation score at 30 min	4.57±0.62
Height (cm)	165.62±8.89
Weight (kg)	68.34±8.23
Body mass index (kg/m^2)	24.85±3.34

DISCUSSION

Pain management after almost every surgery is a serious concern for heal care personnel. New potent drugs are now being used which not only show good efficacious results in patients but also pose minimal unwanted side effects. Dexmedetomidine is now getting used for sedation during various surgical procedures. It works as an α_2 adrenergic agonist with minimal adverse outcomes. Dexmedetomidine shows better results by posing stronger specificity for α_2 receptors as compared to clonidine which work against α1 receptor. Another substantial property of dexmedetomidine is its half-life which makes it more suitable than it's counterparts[9,10].

Dexmedetomidine induces its sedative effects by activating transmembrane adrenergic receptors. Consequently, it causes sedation, analgesia and anxiolysis. It is an imidazole compound which is specified for α2 adrenoceptor agonism. Various studies demonstrate its positive effects during surgical procedures by maintaining heart rate and sedation.[11-13] It also showed benefit in relevance with maintaining heart rate and respiratory functioning. Dexmedetomidine induce appropriate effects without causing respiratory distress. Contrary, midazolam induce airway obstruction and hypoxia. Oxygen saturation lower than 95% in patients greater than 60 years of age was also reported in midazolam group[14-17].

Dexmedetomidine also prove advantageous by showing better hemodynamic stability in patients. It helps in prevention of ischemia by lowering neuroendocrine response but therapeutical intervention is still required to control bradycardia and hypotension. Alpha2 adrenoceptor does not interfere with neurotransmitters and not block neuroreceptors thus showing higher chances of reversing hemodynamic effects. Therefore, Dexmedetomidine can be used as a better anesthetic choice for various surgical procedures.

CONCLUSION

The desired sedative effect in patients undergoing perineal surgery using intravenous injection of dexmedetomidine was achieved. Intraoperative dexmedetomidine proved beneficial in perineal surgeries and could be used as a potent sedative drug.
Conflict of interest: Nil

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