



Utilization Pattern of Drugs in Neurosurgical Anaesthesia in a Tertiary Care Hospital in South Kerala

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Abstract

Objective: To analyse the pattern of use of anaesthetic drugs in patients undergoing neurosurgical procedures

Methodology: Data was collected retrospectively from case records of patients who underwent surgery in the Department of neurosurgery during the period January 1,2017 to January30,2017.

Data analysis was performed using SPSS Ver22.

Results: A total of 41 case records were analysed. The major indications of surgery were fracture [19.5%], cranioplasty [26.8%], tumour [24.4%], laminectomy [14.6%] and others include aneurysm clipping and VP shunt. Midazolam was the anxiolytic prescribed for all patients. Among the preoperative opioids, Fentanyl [70.7%] was the commonest followed by Morphine [22%] and Pethidine [7.3%]. All patients received Ondansetron as antiemetic and Glycopyrrolate as anticholinergic agent. Three patients received Dexmedetomidine infusion. Dexamethasone was given intravenously to relieve oedema in all patients. Thiopentone sodium along with Propofol in 92.7%, Thiopentone alone in 2.4% and Propofol alone in 4.9% were the inducing agents. General anaesthesia was maintained with Nitrous oxide, Oxygen and Isoflurane. Paracetamol intravenous infusion was given in 63.4% patients for postoperative pain relief while the rest were given Diclofenac injection intramuscularly.

Conclusion: Our study throws light into the current practice of anaesthetic medications in neurosurgery department of a tertiary care hospital. It also points out the areas of potential drug interactions.

Keywords: anaesthetic medication, neurosurgery, utilization pattern.

Introduction

Anaesthesia is a way to control pain during surgical procedures using various drugs. It includes analgesia, muscle relaxation and amnesia. Globally about 234.1 million major

surgical procedures requiring some form of anaesthesia are undertaken every year^[1]. Anaesthetic techniques are varied such as general, topical, infiltration and intravenous regional anaesthesia^[2]. Plasma concentration of

catecholamines increases during intubation and surgery leading to tachycardia and hypertension^[3]. Attenuation of such responses is of great importance in the prevention of perioperative morbidity and mortality^[4].

The psychological component of preoperative preparation should be completed with the selective use of drugs^[5]. A good premedication renders the patient sedated and eliminates fear. It lessens the amount of anaesthetic required, diminishes the amount of secretions and avoids postoperative vomiting. Analgesics, anxiolytics, sedatives, anticholinergics and antiemetics are the commonly used drugs. The dose, route and indications of the drugs used depend on the choice and experience of the clinician^[6]. WHO defines drug utilization as “The marketing, distribution, prescription and use of drugs in a society with special emphasis on medical, social and economic practices”^[7]. In India, very few studies have been done to determine the pattern of use of anaesthetic agents in surgical specialities. So the present study aims to evaluate this utilization pattern in a tertiary care hospital.

Aims and Objectives

1. To determine the pattern of use of anaesthetic drugs in patients undergoing neurosurgery in a tertiary care hospital in South Kerala.

2. To identify adverse effects if any.

Materials and methods

A retrospective observational study was conducted using case records of patients undergoing neurosurgery for various indications during the period January 1 to January 30, 2017. A predesigned proforma was used to collect demographic details, indication for surgery and drugs used in anaesthesia. The study was initiated after getting Institutional Ethics Committee clearance.

Inclusion criteria

Patients of age 15 to 60 years of ASA 1 and 2 of either gender who had undergone neurosurgical procedures during the period

Exclusion criteria

Antenatal population

Data analysis

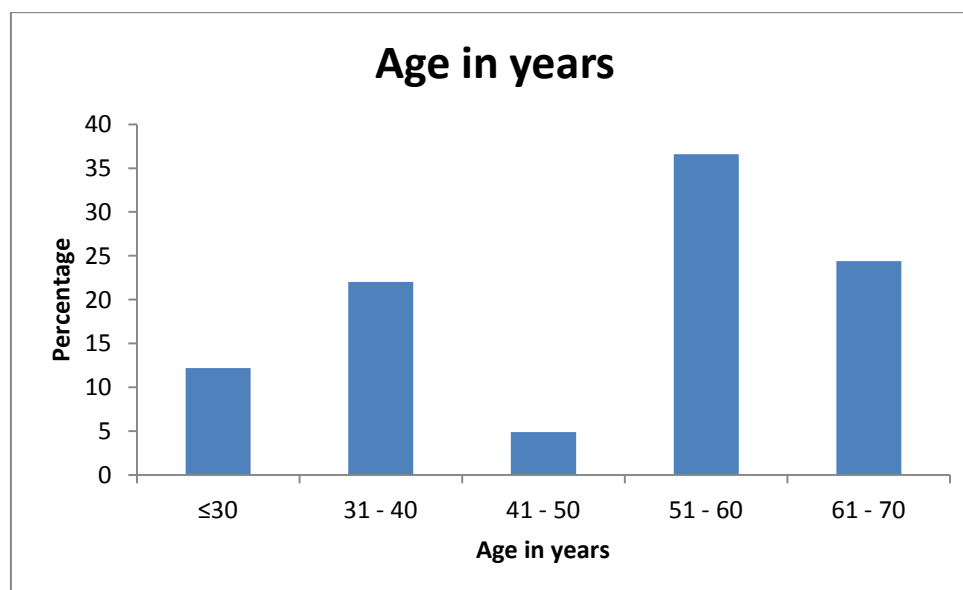
Consecutive sampling was done and the data was analysed using SPSS Ver22.

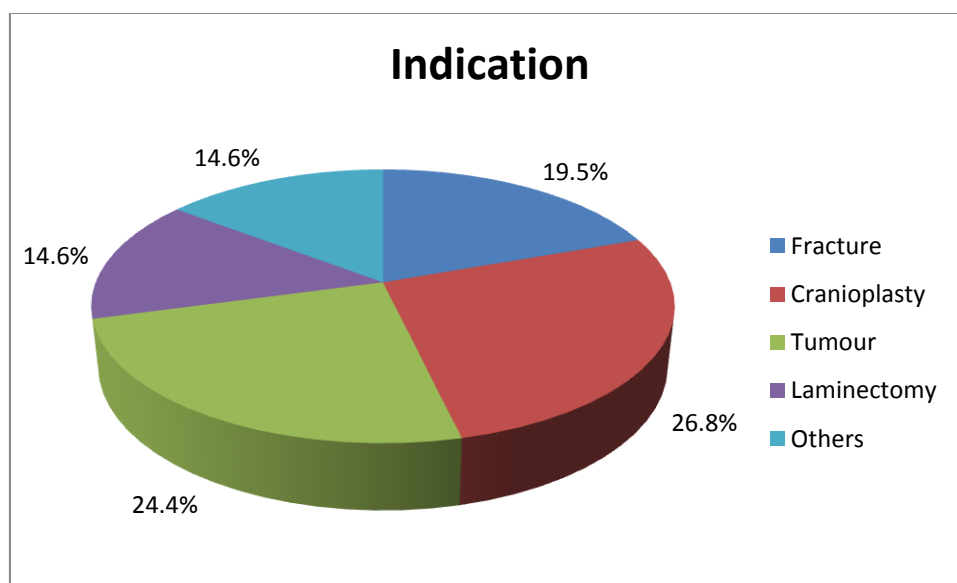
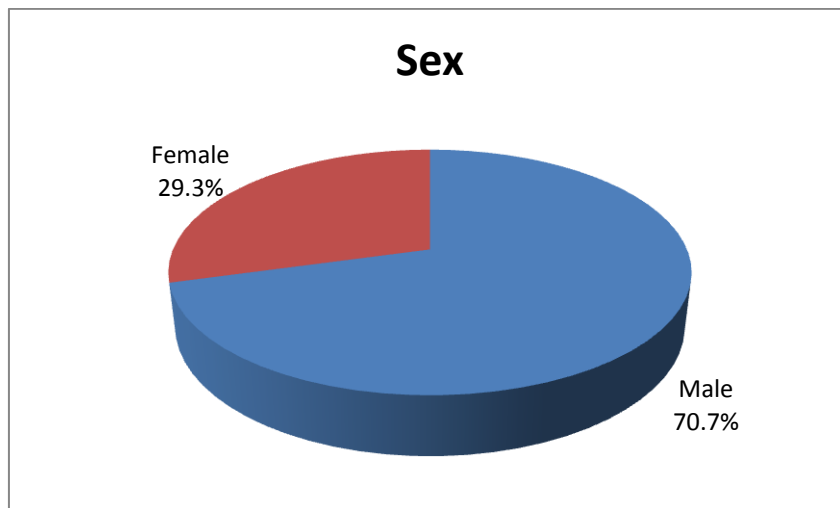
Results

Mean age 50.12 years

Standard deviation= 13.64

Age range - 22-68 years



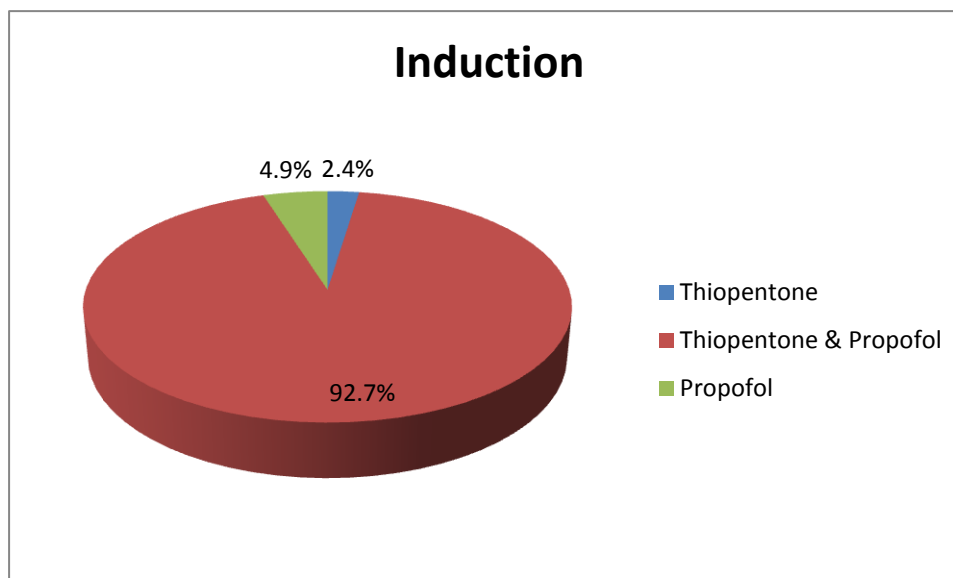


Comorbidities

Comorbidities	Frequency	Percent
Nil	23	56.1
Hypertension	3	7.3
Diabetes	3	7.3
Hypothyroidism	3	7.3
Hypertension, Diabetes	2	4.8
Seizure	2	4.8
Hypertension, Diabetes, Hypothyroidism	2	4.8
Parkinsonism	1	2.4
Coronary artery disease	2	4.8

Premedication

Premedication	Frequency	Percent
Midazolam	41	100.0
Glycopyrrolate	41	100.0
Ondansetron	41	100.0
Fentanyl	29	70.7
Morphine	9	22.0
Pethidine	3	7.3
Dexona	100	100.0



Discussion

The term premedication refers to use of drugs before anaesthesia to make it pleasant and safe. Premedication with opioids and benzodiazepines help to smoothen induction and reduce the amount of anaesthetic required. Antiemetics and proton pump inhibitors prevent gastric aspiration. Usually intravenous anaesthetic agents are used for the induction of anaesthesia and maintained by an inhalational agent. This is supplemented by analgesics and muscle relaxants. Pain in the postoperative period can produce restlessness and adequate analgesia must be provided to attenuate this.

Out of the 41 preanaesthetic records analysed, the mean age was 50.2+/- 13.64 years. 29 patients were males and 12 were females. The common indications for surgery were cranioplasty, tumour, fracture, laminectomy, aneurysm clipping, VP shunt etc. 56.1% of patients had no comorbid condition. Among the comorbid conditions, hypertension predominated, closely followed by diabetes mellitus and hypothyroidism.

Premedication for anxiety is important in children and elderly and has importance in emergence agitation in these patients^[8]. Benzodiazepines are the most commonly used anxiolytics. In our study, IV Midazolam was the only anxiolytic prescribed which coincides with the

study of Zeev N Kain et al where the most commonly used anxiolytic was IV Midazolam^[9]. Among the opioids, Fentanyl was used in 29 patients, while 9 patients received Morphine and the rest were prescribed Pethidine. These findings were similar to previous studies where Fentanyl was the most common opioid analgesic used^[10]. Glycopyrrolate was the only anticholinergic used in all patients. It is more potent and has less incidence of CNS side effects, tachycardia compared to Atropine^[11].

5HT₃ antagonists like Ondansetron, Ramisetron are very effective in preventing postoperative nausea and vomiting. They reduce the risk of aspiration pneumonia in patients receiving anaesthesia. Ondansetron is devoid of any significant effect on dopamine, histamine, sympathetic or parasympathetic receptors^[12]. Ondansetron was prescribed to all patients. Intravenous Dexamethasone was given to all patients to relieve oedema. Induction of anaesthesia was done with Thiopentone and Propofol in 92.7% of patients and Propofol alone in 4.9%. Anaesthesia was maintained with Isoflurane, Nitrous oxide and Oxygen and was reversed with Glycopyrrolate and Neostigmine depending on the case. Postoperative pain was relieved with Paracetamol intravenous infusion in 63.4% of patients and with intramuscular injection

of Diclofenac sodium in the rest. Dexmedetomidine intravenous infusion was given to three patients for sedation and analgesia.

Limitations

Small sample size, single centre data and cross sectional design limits the generalization of our study in all surgical specialities. Moreover, patient satisfaction was not evaluated in our study.

Conclusion

Our study gives an insight into the current practice pattern of anaesthesia in neuro surgery department of a tertiary care hospital and helps to recognize areas of improvement .

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