



A PROSPECTIVE ANALYSIS OF DRUG USE PATTERN OF GENERALIZED ANESTHESIA IN A TERTIARY CARE HOSPITAL


Lokya Naik S^{1*} and China Koteswara Rao Peta²

¹Assistant Professor, Department of Anaesthesia, ²Assistant Professor, Department of General Surgery, RVS Institute of Medical Sciences, Chittoor, Andhra Pradesh, India.

ABSTRACT

Introduction: Based on the aspects of convenience and safety general anesthetics being the most frequently used anesthetics in health care field, in the present study to analyse drug use pattern in a tertiary health care hospital. Drug utilization review has become a potential tool in the recent years in evaluating the health care systems. With increased marketing of new drugs day by day and different types of drug prescriptions and polypharmacy has grown concern on delayed adverse effects and cost effective analysis of drugs especially in tertiary health care hospitals. To improve the drug prescribing, decision making, administration and drug use DUE lays a key role by educating and providing better suggestions to the health care team. **Materials and Methods:** The present study is a prospective analysis of drug use pattern of general anesthetics in RVS multi-speciality Hospitals, Chittoor, Andhra Pradesh, India. The study was designed to carry out in all the departments of hospital which is approved for carrying out the study by the Institutional Ethics Committee (IEC). **Results and Discussion:** The study consisted of about 71 patients who were undergone for surgery under general anesthetized condition. Various surgical procedures that have undergone in the study hospital during the study period are Laproscopic cholecystectomy, Radical mastectomy, neurologic surgery and cardio vascular surgery to a number of 42, 11, 8, 4 patients respectively. Patients are pre-anesthetized by using various drugs like ranitidine, alprazolam, midazolam, ondansetron, fentanyl at their required doses based on the clinical conditions of the patients. the mean dose of ranitidine administered in the dosage form of tablet was 137.3 mg, the mean dose of tablet alprazolam administered orally included a dose of 0.51 mg, intravenous administration of midazolam at a mean dose of 1.12mg, ondansetron at a dose of 3.89 mg, fentanyl at a dose of 136.76 mcg were given to the patients. **Conclusion:** From the study it is theoretically seen that the selection of drug is rationale based on the clinical condition. The use of propofol is found to be the most frequently used drug of choice for many surgical procedures in RVS Multi-specialty Hospitals. Further analysis of drug use is required for merely analyzing the economic strategies of hospital stay. It is also noted that abdominal surgeries are of high in number in the tertiary care hospital were the study has been carried out.

Keywords :- Propofol, poly-pharmacy, General anesthesia, DUE, Clinical pharmacist.

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INTRODUCTION

Based on the aspects of convenience and safety general anesthetics being the most frequently used anesthetics in health care field, in the present study to analyse drug use pattern in a tertiary health care

hospital[1]. Drug utilization review has become a potential tool in the recent years in evaluating the health care systems[2]. With increased marketing of new drugs day by day and different types of drug prescriptions and

polypharmacy has grown concern on delayed adverse effects and cost effective analysis of drugs especially in tertiary health care hospitals[3]. To improve the drug prescribing, decision making, administration and drug use DUE lays a key role by educating and providing better suggestions to the health care team[4]. In terms of patients DUE plays a major role by educating the patients on the use and administration and drug use after getting discharge from the hospital, which is done by name of patient counseling by the clinical pharmacists[5]. They also makes interventions in therapeutic approach for various clinical conditions by evaluating and monitoring the therapeutic drug use[6]. The main aim of DUE is to improve the rationale of drug use and to compare if certain therapy values for the money paid[7].

Drugs that produce reversible loss of all consciousness and sensations are terms as General anesthetics (GA)[8]. General anesthetics are known to cause muscle relaxation, immobility, sleep, amnesia, abolition of autonomic reflexes, abolition of somatic reflexes by increasing the threshold of firing of neurons of central nervous system, however, the exact mechanism of action is not yet clear[9]. In different regions of central nervous system, different sensitivities for GA are present in the brain[10]. Lipid solubility of drug is highly seen resulting in bioavailability of drug when inhaled, in case of anesthetics[11].

MATERIALS AND METHODS:

The present study is a prospective analysis of drug use pattern of general anesthetics in RVS multi-speciality Hospitals, Chittoor, Andhra Pradesh, India. The study was designed to carry out in all the departments of hospital which is approved for carrying out the study by the Institutional Ethics Committee (IEC)[12]. The study was carried on the patients who are administered with general anesthetics as a part of therapeutic approach for their clinical health condition[13]. All the case reports were collected from the bed side of the hospital and the required data for the study like, the type of anesthesia given, route of administration, dose and frequency of drug administration, any adverse effects noted, cost and economic outcome of the therapy, demographics[14] of the patients like age, gender, past medical history, clinical complaints and comorbidities have been collected[15]. The study was carried out for a period of 6 months in the year of 2018. Patients are involved in the study after explaining the informed concern form clearly to the patient or the guardian[16]. The study population included about 71 patients, after excluding the patients given with local anesthetics.

RESULTS AND DISCUSSION:

The study consisted of about 71 patients who were undergone for surgery under general anesthetized condition. Various surgical procedures that have undergone in the study hospital during the study period are Laproscopic cholecystectomy, Radical mastectomy, neurologic surgery and cardio vascular surgery to a number of 42, 11, 8, 4 patients respectively. Patients are pre-anesthetized by using various drugs like ranitidine, alprazolam, midazolam, ondansetron, fentanyl at their required doses based on the clinical conditions of the patients. the mean dose of ranitidine administered in the dosage form of tablet was 137.3 mg, the mean dose of tablet alprazolam administered orally included a dose of 0.51 mg, intravenous administration of midazolam at a mean dose of 1.12mg, ondansetron at a dose of 3.89 mg, fentanyl at a dose of 136.76 mcg were given to the patients. The dose and drug use in the patients for purpose of pre-anesthetisation is clearly given in the TABLE 1.

Among the overall study population, 59.15% were undergone for Laproscopic cholecystectomy, 15.49% were undergone with radical mastectomy, cardiovascular surgeries accounted for 5.63% and neurologic surgery accounted for 11.26%. which is clearly represented in the TABLE 2.

In the 71 number of study population about 45 patients were undergone with Abdominal surgery procedures, who were admitted in gynecology and obstetrics department, and general medicine departments. The surgical procedure was taken over by two steps, one by initially induction of anesthesia, followed by maintenance of anesthesia. Propofol is the drug that has been more frequently used for induction as well as maintenance of anesthesia which accounted for 89% and 87 respectively of the overall population undergone for abdominal surgery, especially in laparoscopic cholecystectomy.

About 8 patients among the overall study population have been undergone with different neurological surgery procedures which included craniotomy, Gross tumour resection, Ventriculoperitoneal shunt which requires administration of general anesthetics. Among the drugs like propofol, etomidate, isoflurane and sevoflurane drugs, propofol was found to be the most used drug in the study hospital for both induction and maintenance of anesthesia. The percentage of use of propofol was about 50% for induction of anesthesia and 63% for maintenance of anesthesia. Mitral valve replacement, Double valve replacement, CABG are the different cardiothoracic vascular surgeries undergone in about 4 patients of the study population. Among various drugs used, isoflurane was the major drug of choice noticed to be used in cardiovascular surgeries[17].

Table 1: Preanaesthetic Medications

Drug	Dose(Mean \pm SD)
Tab. Ranitidine (mg)	137.3 \pm 5.15
Tab. Alprazolam (mg)	0.51 \pm 0.03
Inj. Midazolam (mg)	1.12 \pm 0.52
Inj. Ondansetron (mg)	3.89 \pm 4.5
Inj. Fentanyl (mcg)	136.76 \pm 99.13

Table 2: Procedures Incorporated in the Study

Procedures	Frequency (R)	Percentage (%)
Laparoscopic cholecystectomy	42	59.15
Radical mastectomy	11	15.49
Cardio vascular surgery	4	5.63
Neurologic surgery	8	11.26

Table 3: Anaesthetic Agents Administered for Abdominal Surgeries

Procedure	Induction of anesthesia N =45		Maintenance of anesthesia N = 45		
	Propofol	Etomidate	Propofol	Isoflurane	Sevoflurane
Laparoscopic cholecystectomy	40	2	39	2	1
Exploratory laparotomy	2	0	1	0	2
Jejunostomy reversal	1	0	0	0	0

Table 4: Anaesthetic Agents Administered For Neurosurgery

Procedure	Induction of anesthesia N = 8		Maintenance of anesthesia N = 8		
	Propofol	Etomidate	Propofol	Isoflurane	Sevoflurane
Craniotomy	4	1	5	1	0
Gross tumour resection	2	0	2	0	0
Ventriculoperitoneal shunt	1	0	0	0	0

Table 5: Anaesthetic Agents Administered For Cardiothoracic Vascular Surgeries

Procedure	Induction of anesthesia N =4		Maintenance of anesthesia N = 4		
	Propofol	Etomidate	Propofol	Isoflurane	Sevoflurane
Mitral valve replacement	1	1	0	2	1
Double valve replacement	0	1	0	1	0
CABG	1	0	0	0	0

CONCLUSION:

From the study it is theoretically seen that the selection of drug is rationale based on the clinical condition[18]. The use of propofol is found to be the most frequently used drug of choice for many surgical

procedures in RVS Multi-specialty Hospitals. Further analysis of drug use is required for merely analyzing the economic strategies of hospital stay. It is also noted that abdominal surgeries are of high in number in the tertiary care hospital where the study has been carried out.

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