

Cross Sectional Evaluation of the Outcomes of Preanesthetic Medications in Patients Undergoing Exploratory Laparotomy: An Institutional Based Study

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ABSTRACT

Introduction: Pre-anaesthetic medication is essential to give relief to the patient of pre-operative and post-operative pain and also to reduce secretions and relieve the patient of anxiety. Though the literature review on various pre-anaesthetic medication yielded a very scanty data hence it has been planned to conduct a study to assess the usage of pre-anaesthetic medication in patients undergoing exploratory laparotomy. Therefore, the objective of this study was to clearly understand the utilization pattern of pre-anaesthetic medications in patients undergoing exploratory laparotomy.

Materials and Methodology: Present cross-sectional observational study was intended to be conducted in patients of both sexes and of all age groups who are in the verge of receiving pre-anaesthetic medication prior to any surgical procedures in routine or emergency conditions. Statistical analysis was mostly carried out if the categorical variables were presented as number and percentages whereas continuous variables were described as mean and standard deviation.

Results: A total 150 patients of both the genders were enlisted in the study. The age of patients ranged from 3 years to 85 years. The mean age \pm SD of the patient was 38.62 ± 17.82 years. Males were outnumbered females in this study, and they were in the ratio of 1.88:1. Perforation peritonitis was the most

(37.90%) common indication for exploratory laparotomy followed by intestinal obstruction (22.58%), appendicular perforation (9.68%) and penetrating injury abdomen (8.87%).

Conclusion: The two major pre-anaesthetic medications used in patients undergoing exploratory laparotomy were ondansetron and tramadol. Glycopyrrolate was the only anticholinergic agent which has been successfully used in one patient.

Keywords: Exploratory Laparoscopy, Pre-Anaesthetic Medication, Drug Utilisation.


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INTRODUCTION

The term Pre-anaesthetic medication is collectively applied to the administration of certain drugs prior to the administration of general anaesthetic agent in order to enhance the anaesthetic agent safer for the patient. Additionally, it provides great relief from pre-operative and post-operative analgesia apart from reduction in the salivary and bronchial secretions and therefore intended to prevent the reflex laryngospasm. In order to maintain the appropriate and effective use of pre-anaesthetic medication, Drug utilisation review is being effectively used. Drug utilization has been detailed as the marketing, distribution, prescription and use of drugs in a society especially in large multi-speciality clinical setups with emphasis on the resulting medical and social consequences.¹ These studies are also play an important role in ensuring rational use of medicines, helps in the understanding of various drug interactions and reducing the risk of adverse drug events that could be encountered.

Pre-anaesthetic medications are usually prescribed and administered to prevent anxiety, pain and postoperative complications that are associated in patients who are undergoing surgery under general anaesthesia. Pre-anaesthetic medications are also useful to facilitate the operative procedures.²

Various drugs that have been used as a preanesthetic medications include benzodiazepines, anticholinergic agents, pentazocine, opioids, 5-HT₃ antagonists and ranitidine are mostly administered before surgery. The pattern of pre-anaesthetic medication might differ based on the anaesthetic agent being used, profile of the patient, hospital setup and type of surgical procedure. Though the literature review on various pre-anaesthetic medication yielded a very scanty data hence it has been planned to conduct a study to assess the usage of pre-anaesthetic medication in patients undergoing exploratory laparotomy.

Therefore, the objective of this study was to clearly understand the utilization pattern of pre-anaesthetic medications in patients undergoing exploratory laparotomy.

MATERIALS AND METHODOLOGY

Present cross-sectional observational study was intended to be conducted in patients of both sexes and of all age groups who are in the verge of receiving pre-anaesthetic medication prior to any surgical procedures in routine or emergency conditions in the Department of Anaesthesiology, Santosh Medical College and Hospital, Ghaziabad, Uttar Pradesh, (India) and the proposed time period of this study was set to be around 6 months. The complete

profile of the patients was regularly collected in a pre-designed proforma which included patient's demographic details, provisional diagnosis, diagnostic methods, co-morbidities, previous history of any medication and indications for exploratory laparotomy. The drugs being used during Pre-anaesthetic medications were noted down elaborately. The mean number of drugs prescribed as pre-anaesthetic medications, percentage of drugs prescribed by generic name were assessed using the WHO (world health organisation) core drug prescribing indicators.³ Statistical analysis was mostly carried out if the categorical variables were presented as number and percentages whereas continuous variables were described as mean and standard deviation.

Table 1: Baseline characteristics of the patients Parameters Results (n=150)

Age range	3 years to 85 years
Mean \pm SD	38.62 \pm 17.82
Male (%)	98 (65.3%)
Female (%)	52 (34.7%)

Table 2: Indications for the exploratory laparotomy

Surgical indications	Number of patients (%)
Perforation peritonitis	57 (37.90%)
Intestinal obstruction	34 (22.58%)
Appendicular perforation	13 (8.87%)
Penetrating trauma to abdomen	14 (9.68%)
Adhesion obstruction	6 (4.03%)
Liver abscess	4 (2.41%)
Obstruction by food bolus	4 (2.41%)
Right inguinal hernia	2 (1.61%)
Abdominal abscess	2 (1.61%)
Gun-shot injury	2 (1.61%)
Ovarian mass	1 (0.80%)

Table 3: Drugs used in pre-anaesthetic medication.

Drug name	Number of patients
Ondansetron	150 (100%)
Tramadol	150 (100%)
Hydrocortisone	2 (1.61%)
Pantoprazole	1 (0.80%)
Glycopyrrolate	1 (0.80%)

RESULTS

A total 150 patients of both the genders were enlisted in the study. The age of patients ranged from 3 years to 85 years. The mean age \pm SD of the patient was 38.62 \pm 17.82 years. Males were outnumbered females in this study, and they were in the ratio of 1.88:1. Females were comparatively younger than males as given in table - 1. The demographic data has shown the influence of gender and age in determining the indications for surgery. The morbidity pattern has been detailed in table - 2. Perforation peritonitis was the most (37.90%) common indication for exploratory laparotomy followed by intestinal obstruction (22.58%), appendicular perforation (9.68%) and penetrating injury

abdomen (8.87%). Ondansetron and Tramadol at different doses were given to all the patients as pre-anaesthetic medication. The commonly used doses of ondansetron were 4mg (93.54%), 2mg (4.03%), 8mg (1.61%) and 1mg (0.80%). Whereas the tramadol was given in the dose of 70 mg (34.67%), 60 mg (27.41%), 50 mg (14.51%), 80 mg (9.67%), 100 mg (8.08%), 40 mg (3.22%), 20 mg (1.61%) and 10 mg (0.80%). Apart from these, hydrocortisone was needed to be administered in 2 patients whereas pantoprazole and glycopyrrolate were given in one patient each. All the medicines were generally administered through intravenous route as table - 3.

DISCUSSION

The agents that are used for general anaesthesia are a major and important drug category in use in which the clinical practice has to be taken into account of various aspects of convenience and safety. And the use of pre-anaesthetic medicines for effective facilitation of surgery and reduction in the risk of surgery associated complications is a common practice globally. There might be geographical changes in the pattern of pre-anaesthetic medicine usage. Drug utilization studies could invariably help us to better understand the appropriate drug and dosage based on the patients need, type and the duration of surgeries. Drug utilization studies are also reported to be helpful for scientific as well as administrative usage in large hospital settings. Significant inputs into the usage of medicines, indications, side effects and drug interactions could be obtained from such studies.^{1,4} In this study, the study group was majorly adult patients with mean \pm SD age of 38.62 ± 17.82 years. Additionally, male was observed to be outnumbered females in the ratio of 1.88:1. This gender variation may be attributed to smoking, alcohol intake and diet rich in saturated fats seen commonly among Indian males. The baseline characteristics of the study population are in correlation with the previous study carried out in India^{4,5} but there is a sharp contradiction to another study being conducted in India where the number of females patients was more than males. In the present study, perforation peritonitis (37.90%) followed by intestinal obstruction (22.58%) were the two most common indications for exploratory laparotomy. These results are in accordance with some other studies conducted in India by Kulkarni et al⁵ observed carcinomas/tumour as the major cause for major surgical procedures. This might be due to the fact that they have enlisted all the patients who were undergoing major surgical procedures under general anaesthesia. Pre-anaesthetic medications are used to reduce gastric acid, volume of gastric secretion, increase gastric pH, reduce the risk of nausea, vomiting and aspiration of gastric contents during post-operative period.^{6,7,8} Various adverse effects of drugs such as anti-histaminics, anticholinergics, dopamine antagonists and phenothiazine derivatives have limited their use in the effective management of post-operative nausea and vomiting.⁹ A retrospective Pharmaco-epidemiological study observed the use of Midazolam, Glycopyrrolate, Ondansetron and Fentanyl as a pre-medication agent in 92.1% patients⁶ and observed fentanyl as an opioid of choice as it is shorter acting agent and can be used even in patients with deranged liver metabolisms. A Cochrane review assessed the anti-emetic effect of ondansetron, dolasetrone, granisetron, tropisetron, dexamethasone, droperidole, cyclizine and metoclopramide in 1,03,237 patients and reported that all these drugs effectively prevented nausea or vomiting post-surgically.¹⁰ But, it did not report any evidence that one drug was far better than another. Age, sex, type of surgery or premedication timing did not change the drug effects, and the effects become additive when two or more drugs were combined to be given together. These agents are significantly effective in the prevention of post-operative nausea and vomiting. Ondansetron, the first agent introduced in this class, is reported to be devoid of any significant effect on other receptors (e.g., dopamine, histamine, or sympathetic/parasympathetic receptors) apart from 5-HT₃.¹⁰ One meta-analysis has demonstrated that the comparable efficacy of ondansetron, granisetron, tropisetron, and

dolasetron in the prophylaxis of PONV alone.¹¹ Such discrepancy could partly be attributed to the different affinity for 5HT₃ receptors and different half-life varying from 3-7 hours. In a study Clark et al¹² reported that ranitidine which has been given is more effective than proton-pump inhibitors in reducing the volume of gastric secretion and increasing gastric pH. Yet another prospective, randomized, double-blind study demonstrated that intravenous prophylactic ranitidine and metoclopramide is useful to reduce the volume of gastric content and increase gastric pH.¹³ Only one patient was found to be administered intravenous pantoprazole (PPI) injection. In the present study, injection tramadol was given to all (100%) patients pre-operatively to effectively control the post operative pain. Wang et al¹⁴ elaborated that intravenous pentazocin that has been administered 10 min before surgery provides an effective reduction in intra-operative pain, haemodynamic change, intensity of postoperative pain and tramadol consumption during major surgical procedures under general anaesthesia. Administering an analgesic medication before the start of the surgical stimuli can effectively decrease or block the development central pain sensitization and then result in least postoperative pain.¹⁵ Patil and Kulkarni⁴ revealed that the most common use of pentazocine as a pre-anaesthetic medication for exploratory laparotomy. As the pre-surgical period is more often associated with stress, fear and anxiety, benzodiazepines group of drugs are commonly used as pre-anaesthetic medications in such conditions to reduce anxiety. In a retrospective study from India, alprazolam was the most commonly used anti-anxiety benzodiazepine.¹⁶ In an old survey, anticholinergic premedication use was reported in 36% and 56% of adults and children, respectively. The results revealed that atropine and hyoscine to be the most commonly used anticholinergic drugs.¹⁸ In our study, 1 (0.80%) patient received glycopyrrolate.

CONCLUSION

The two major pre-anaesthetic medications used in patients undergoing exploratory laparotomy were ondansetron and tramadol. Glycopyrrolate was the only anticholinergic agent which has been successfully used in one patient.

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