

A Retrospective Audit Of Drug Administration Errors During Elective Surgery

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Abstract

Wherever humans work, varying degrees of error occur and the health care system is not exempted.

The error may

occur during drug administration. Materials/

Method: A retrospective study involving all patients who had undergone surgery as elective procedures using a general or regional anaesthetic technique

within a twelve month period and

discussion of the relevant literature.

Result Out of the eight hundred and ninety-five elective surgical procedures, five patients were reported as involved in errors of drug administration: Conclusion: In order to minimize risks, the anaesthetist must carefully read labels before drug

administration. Such labels must be written using clear handwriting or typed out where possible

INTRODUCTION

Anaesthetists are involved in prescribing, selecting, preparing and administration of drugs in the operating room, intensive care unit or during acute or chronic pain management through the intravenous or central nervous system routes. They are not immune from medication errors as incidence of drug errors abound.¹ A medication error may be serious and the effects of the mistakes may have more dire consequences than those of doctors in other area of medicine.² It is expected that more errors may occur during emergency procedures so the authors thought it would be beneficial to review what happens during elective procedures.

MATERIALS/METHOD

This retrospective study involved all the patients who had undergone elective surgical procedures using either a general or regional anaesthetic technique administered by trained or trainee anaesthetists in the year 2009 between January 1 and December 31. Procedures performed under local anaesthesia provided by the surgeons and emergency procedures were excluded. The cases during which errors in drug administration were reported were then analyzed.

RESULTS

Anaesthetic practice at the University of Nigeria Teaching Hospital Ituku-Ozalla has always involved per-operative reception of anaesthetic drugs from the theatre pharmacy in their ampoules. Thereafter, the attending anaesthetist withdraws and properly labels these drugs in different syringes. Each syringe is labeled using an adhesive strip with the name, quantity of the withdrawn drug per milliliter written on the strip. The anaesthetist that withdrew the drugs from the ampoules into the syringe may not be the one to administer the drug. Each syringe or ampoule label is read off before use and when not properly read, the wrong drugs were administered.

A total of one thousand five hundred and nineteen (1519) procedures were performed in the period under review. The elective cases were eight hundred and ninety-five cases. Of these, eight hundred and twenty-three patients (823) (54.1%) had their procedure performed under general anaesthesia while seventy two patients (72) (4.73%) had their surgeries performed using a regional block- spinal or epidural.

During these elective procedures, five patients (0.55%) were involved in errors of drug administration or near misses.

Four (0.44%) of these involved general anaesthetic procedures while the near miss occurred during a regional block (0.11%). This gave an incidence of .004 and 0.001 for general and regional procedures respectively.

The drugs involved included oxytocin, pancuronium, neostigmine, metoclopramide and lignocaine/bupivacaine. The oxytocin had been substituted for ketamine, pancuronium for suxamethonium, neostigmine for atropine, metoclopramide (plasil) for pancuronium. Regarding the lignocaine/bupivacaine near miss, both had been drawn up in 5ml syringes and the registrar could no longer identify which syringe contained what so both were discarded. Fresh drugs were withdrawn.

The grades of anaesthetists involved were: junior registrars in 4 and a senior registrar in one. Causes of the errors were: poor theatre light, syringe swap and ampoules swap (lack of care while reading the correctly labeled syringes and ampoules), while lack of labeling because of a sterile procedure accounted for the lignocaine near miss. Two of the patients involved were paediatric patients while the others were middle-aged. All were ASA 1 patients. Timely intervention by the senior anaesthetists ensured successful outcome in all cases. The surgical procedures were: two caesarean section, urethroplasty, hypospadias repair and an exploratory laparotomy. Monitors used during the procedures were: the pulse oximeter, non-invasive blood pressure, capnograph and electrocardiograph.

DISCUSSION

An error can be described as an unintentional mistake for example as a result of poor judgment or lack of care. In other words, an act that through ignorance, deficiency, or accident departs from or fails to achieve what should be done".³

What should be done is generally known as "the five rights": the right drug, right dose, right route, right time, and right patient.³ One can make an error of omission (failure to act correctly) or an error of commission (acted incorrectly). In the study, the wrong drugs were given accidentally.

Incidence of medication errors abound in medical practice.⁴ In anaesthesia, errors in drug administration have been known to occur, and while some may be minor, some have been classified as serious, and others have resulted in serious harm to patients.^{1,5,6} The errors in this study were serious but fortunately did not cause serious harm to the patients.

Following their study regarding adverse drug errors in

anaesthesia, Fasting and Gisvold concluded that drug errors are uncommon, and represent a small part of anaesthesia problems.⁵ Barker and Sanders, however commented on a number of drug errors that had caught media attention.⁷ However, a recent survey also reported that drug errors were common, 85% of participants in the survey having experienced at least one drug error.⁸ Whether common or uncommon, drug errors have the potential for serious morbidity and a likelihood of disastrous impact on the patient involved and the caregivers. Orser et al in their survey reported 4 deaths.⁸

The pattern of errors which have been reported in literature include syringe swap, wrong drug, and wrong dose of the right drug.^{5,6,8} Mato and Fyneface reported changes in known packaging of drugs ketamine and suxamethonium without prior notification which resulted in near misses.⁹ Ampoule swap has also been reported, but syringe swap, was the commonest error in these reports.^{1,5} This was the error reported in the cases. Muscle relaxant drugs were found to be most commonly involved.⁵ Muscle relaxants were involved in 2 of our cases, anticholinesterase, neostigmine and local anaesthetics in each of the remainder. Also, poor theatre lights were a cause of the error involving neostigmine. Both neostigmine and atropine were in similar looking ampoules.

Various suggestions have been made on how to reduce the incidence of drug errors in anaesthetic practice. Among these are standardized colour coding for syringe drug labels, improved standards for anaesthetic drug labels, reporting of drug errors to bodies responsible for drug packaging, improved resident training in intravenous drug management, and the establishment of a reporting program for medication errors.^{6,8,10}

A standardized colour code for user-applied syringe labels for anaesthetic drugs exist in the USA, Australia, New Zealand and Canada. A national colour standard for syringe drug labels is also being proposed for the UK¹⁰. These measures aimed at minimizing the risk of drug errors have focused on syringe labels, because in these countries, syringe swap has been identified as the commonest error.^{5,8}

There is a need to design a system that prioritizes safety and the prevention of mistakes with drugs while continually evaluating them for modification according to newly detected failures. We suggest that intravenous drug management should involve proper reading of labels and crosschecking with a colleague before injecting (such as is

our practice before blood transfusion). Also, all the drugs should not be drawn at the same time, but withdrawn on as needed basis. Labels should also be written in clear handwritings or typed where possible. Had these procedures been observed in these cases, there would have been no errors.

Finally, another measure in establishing a suitable prevention is to admit that error is of human nature. That is to say that in spite of the training and care of anaesthetists, the mistakes can happen as in any human process. This should however, not be classified as incompetence. An analysis of the mistake to identify how, where and why it has been produced is needful but should not be undertaken in order to punish or to eliminate the responsibility of the mistake. Rather faults in a system should be modified to prevent recurrence. One of the shortfalls of a retrospective study is that not all incidents may have been reported for various reasons. The establishment of a formal system of communicating drug mistakes is thus necessary.

CONCLUSION

Error is of human nature and may manifest during the

practice of anaesthesia. Vigilance must be the watchword so that morbidity and mortality can be prevented among surgical patients.

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