Case study

Inadvertent intravenous administration of an oral preparation of Ibuprofen

Abstract:

The inadvertent intravenous administration of oral suspension which is rarely reported has contributed to potential patient harm[i]. we received an incident report in which a patient had received an oral liquid formulation intravenously. This has been happening when an oral liquid is prepared or dispensed in a parenteral syringe[ii]. Due to the break-in mental concentration, the medicine had been administered intravenously. Some health professionals did not accept the fact that the Luer connection[iii] on an intravenous syringe facilitates mis-administration. This is why we constantly repeat recommendations to dispense and administer unit doses of oral liquids in particular oral syringes[iv]. We strongly support that, the dispensing and administering of commercially available and compounded medicine in a particular cup and oral syringes[v] or any other suitable containers. Avoid medication administration errors make sure the availability of oral syringes in the hospital and patient areas where liquid doses are administered orally.[vi]

Oral syringes are not available in Pakistan and nurses routinely use injection syringes for oral liquid administration, as it helps in preventing spill of dose especially in young/non-cooperative children or patients. Availability of oral syringes in the hospital may reduce the inadvertent administration of medicine. [vii]

Introduction:

Medical errors are more common and are more likely to cause serious injuries and deaths than other types of medical errors[viii]. Despite a few studies in this area, this type of incident may be more common than reported. Such kind of medication errors may cause thrombosis and sepsis[ix]. Therefore, they are a major issue for patient safety. America institute of safe medication practice highlights those parenteral syringes should never be used to make oral or oral medicine, but an oral syringe should always be used[x]. Given the lack of reported cases, as far as we know, we clarify the issue of accidental intravenous administration of ibuprofen suspension.

Case presentation:

We report a 4 years old female patient admitted to the hospital with bacterial meningitis. There was an inadvertent intravenous administration of oral Ibuprofen suspension 7.5ml (300mg) through a peripheral intravenous line.

Immediately after administration, she became unconscious for 2 to 3 minutes followed by spontaneous recovery. Her heart rate and breathing remained stable throughout. She remained irritable for some time.

No local reaction occurred at the injection site, but as a precautionary measure, the cannula was removed. No specific treatment was given to the patient except for intravenous fluid from

a different cannula site. She was immediately shifted to the pediatric intensive care unit (PICU) of the hospital for close observation and monitoring purposes. The family was informed and counseled about the incident and the need for close observation. The patient was observed for 48 hours in PICU where she remained stable throughout.
At the time of the incident, she was on Meropenem, Vancomycin, Phenytoin, and Levetiracetam. The patient remained stable and was discharged on the 4th day of the event.

Discussion:
Very limited published reports about inadvertent intravenous administration of oral (non-sterile) suspension in healthcare settings are available.[xi] Nevertheless, there have been documented reports of intravenous drug users injecting methadone liquid and acetaminophen syrup. The most common concerns were thrombosis due to the viscosity of the syrup, and infection, including abscess at the injection site (due to non-sterile product). [xii]

In our case, the steps involved in error were: Nurse drew the oral suspension from the bottle according to the dose (7.5ml) in a syringe for oral administration. She handed it over to the nursing assistant (NA) for administration. NA did not realize that this is for oral administration and instead it was given through IV cannula. The syringe used for administration was a disposable type injection syringe (and not an oral syringe). Oral syringes are not available in Pakistan and nurses routinely use injection syringes for oral liquid administration, as it helps in preventing spill of dose especially in young/non-cooperative children or patients.

It is interesting to note that there are reported incidents in literature where despite using oral syringes which do not fit with IV cannula, staff has managed to push through intravenously medication with some leakage. We feel that steps need to be taken to modify the protocols for use of oral syringes including modification of the color, design, and labeling of these syringes.[xiii] [xiv]Moreover, the availability of oral syringes in the hospital environment needs to be ensured to avoid such type errors[xv].

Conclusion:
Inadvertent administration of oral preparation of a commonly used medication is a rare but serious event and can result in increased length of stay, healthcare expenditure, and complications. We report this case to raise awareness among healthcare professionals, especially nurses and doctors.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we

do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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