

**Case Article****Medication Error, What Is the Reason?***A Case Report of Lethal Medication Error in the Field of Toxicology**Ali Banagozar Mohammadi<sup>1</sup>, Hamid Noshad<sup>\*2</sup>, Ali Ostadi<sup>1</sup>, Ali Reza Ghaffari<sup>1</sup>, Massoud Dinevari<sup>1</sup>**Received: 30.05.2015**Accepted: 22.06.2015***ABSTRACT**

**Background:** Medication errors due to different reasons may alter the outcome of all patients, especially patients with drug poisoning. We introduce one of the most common type of medication error in the present article.

**Case:** A 48 year old woman with suspected organophosphate poisoning was died due to lethal medication error. Unfortunately these types of errors are not rare and had some preventable reasons included lack of suitable and enough training and practicing of medical students and some failures in medical students' educational curriculum.

**Conclusion:** Hereby some important reasons are discussed because sometimes they are tremendous. We found that most of them are easily preventable. If someone be aware about the method of use, complications, dosage and contraindication of drugs, we can minimize most of these fatal errors.

**Keywords:** Educational Curriculum, Medication Error, Medical Students.

**IJT 2015; 1408-1410****INTRODUCTION**

Medication error (ME) is a mistake, which leads to some serious unwanted events during treatment process [1]. Incidence of ME in England and America is 2%-14% and in some instances even 51%. About 1-2% of these patients may injure irreversibly [2-4].

Medication error may be happen in different steps like prescribing of drug, dose adjustment, changing the drug and doing orders with nursing staffs [2]. Two predominant types of ME are continuing of wrong drug after appearing of complications and making a mistake in prescribing and selection of suitable drug for a patient [5].

MEs are ongoing problems among hospitalized patients especially those with multiple co-morbidities and polypharmacy such as patients with drug poisoning.

Prescribing errors including inappropriate drug, dose, or treatment durations are frequent [6]. To assess transcription errors, the equivalence of nursery charts and physician's orders

were evaluated and it is found that most of them are due to some mistakes. This was done with first author Dr. Banagozar.

Here we report a case of such dilemma to reduce these types of errors.

**CASE**

A 48 yr old woman with history of depression, due to probable use of a few amount of pesticide, after near half an hour was admitted in a primary hospital with net diagnosis of organophosphate poisoning. This study was performed in 2014 in Sina Teaching Hospital, Tabriz University of Medical Sciences, Tabriz, Iran. The report was approved by local Ethical Committee of Tabriz University of Medical Sciences, Tabriz, Iran.

In this time, the patient was lethargic with GCS level of 12/15. According to diagnosis, 20 mg of atropine and 400 mg pralidoxime were injected, NGT was inserted and gastric lavage & charcoal and sorbitol gavage were performed. Half a liter of normal saline infused and patient with blood pressure of 90/60 mmHg, PR of 184

1. Department of Internal Medicine, Toxicology and General Ward, Sina Hospital, Tabriz University of Medical Sciences, Tabriz, Iran.

2. Department of Internal Medicine, Chronic Kidney Disease Research Center, Sina Hospital, Tabriz University of Medical Sciences, Tabriz, Iran.

\*Corresponding Author: E-mail: hamidnoshad1@yahoo.com

beat/min, RR=25/min and GCG level of 9/15 referred to a tertiary hospital. During an hour (transferring time in an ambulance) again, 20 mg atropine injected. Meanwhile from first admission any medical recording were not found in notes and patient had not any muscarinic sign or symptoms, which were necessary and essential for atropine usage. In referred hospital because of progressive loss of consciousness and severe respiratory distress, patient intubated and mechanically ventilated. Vital signs were BP=190/100 mmHg, PR>200/min, BT> 41°C. On the other hand, lab data were Ph=7.29, PCO<sub>2</sub>= 39 mmHg, PO<sub>2</sub>= 170 mmHg, HCO<sub>3</sub><sup>-</sup>= 16.9 meq/L, Neut= 84%, Hb=14.4, PLT=319000, PT= 38 sec, PT=14.5 sec, INR=1.3, Urea=47 mg/dl, AST=31, ALT= 19, CPK=78, ALP=166, Na= 142 meq/L, K=4.2meq/L. In Spite of immediate therapies, unfortunately patient died probably due to complications of atropine poisoning.

## DISCUSSION

In poisoned patients, antidotes must be prescribed according to clear indications [6, 7]. For this reason, atropine must be injected only in patients exposed to acetyl cholinesterase inhibitors who indicate life threatening muscarinic signs and symptoms. Atropine also is used in various types of bradycardia [8- 10].

In our introduced patient these types of symptoms and signs were absent and only consumption of a pesticide agent was the reason of atropine injection. Atropine was not indicated in such conditions and must be discontinued when atropine over dosage effects such as hyperthermia, hypertension & tachycardia (anticholinergic syndrome) are seen.

Mistakes in drug prescribing (medication error) sometimes may not have a serious complication; meanwhile drug interactions are other problems. Medication error maybe done due to forgetting or lack of scientific or practical skills and it sometimes is due to problems in medical recording [1, 2, 5]. Problems in medical recording are clearly distinguishable in our studied case. In second referral center, they were not aware about injected doses of atropine (due to lack of helping medical recording). Regarding to these factors, continuous educating workshops

and changing of educating curriculum and principals are effective and these are usually preventable.

Medication error in all aspects like doses, type of drug, dose adjustment mainly are seen in medical students or recently graduated doctors, so it must be supervised with other more professional persons. These errors are more common in emergency units (3). Sometime handwriting has problem and nurse make mistakes in reading of the prescriptions (for example digoxin instead of digestive) which may be very hazardous. Sometimes shapes of drugs are very similar, like vials of furosemide and epinephrine. Imagine you want to treat a hypertensive crisis and use intravenous epinephrine instead of furosemide because of some medication errors. All medical staffs and finally involved physicians must be aware about these potent harmful and sometimes lethal mistakes [11-15].

Other related subjects are lack of enough experience problems in history taking and insufficient physical exam, unknown of drugs and their mechanism, on the other hand, having problems in evaluating of risk benefit ratio of the drug. Bedside clinical pharmacologic training was very important in minimizing of so-called problems [16].

Medication errors have been defined as “failure in the treatment process that lead to or has the potential to lead to harm to the patient”. They may occur at each five stages of drug ordering and delivery including prescription, transcription, dispensing, administration, or monitoring [17].

## CONCLUSION

Most of these problems may be resolved when medical faculties and education development centers prepare suitable and enough continues clinical toxicology educational programs. On the other hand, it seems that we must change clinical pharmacology & develop clinical toxicology training of medical students.

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## REFERENCES

1. Aronson JK. Medication errors: definitions and classification. *Br J Clin Pharmacol* 2009;67(6):599-604.
2. Williams D. Medication errors. *J R Coll Physicians Edinb* 2007;37(4):343-6.
3. Likic R, Maxwell SR. Prevention of medication errors: teaching and training. *Br J Clin Pharmacol* 2009;67(6):656-61.
4. Osmon S, Harris CB, Dunagan WC, Prentice D, Fraser VJ, Kollef MH. Reporting of medical errors: an intensive care unit experience. *Critic Care Med* 2004;32(3):727-33.
5. Aronson J. Medication errors: what they are, how they happen, and how to avoid them. *QJM* 2009;102(8):513-21.
6. Betten DP, Vohra RB, Cook MD, Matteucci MJ, Clark RF. Antidote use in the critically ill poisoned patient. *J Intens Care Med* 2006;21(5):255-77.
7. Smollin CG. Toxicology: pearls and pitfalls in the use of antidotes. *Emerg Med Clin North Am* 2010;28(1):149-61.
8. Thiermann H, Steinritz D, Worek F, Radtke M, Eyer P, Eyer F, et al. Atropine maintenance dosage in patients with severe organophosphate pesticide poisoning. *Toxicol Letters* 2011;206(1):77-83.
9. Paudyal BP. Organophosphorus poisoning. *J Nepal Med Ass* 2008;47(172):251-8.
10. Jokanović M. Medical treatment of acute poisoning with organophosphorus and carbamate pesticides. *Toxicol Letters* 2009;190(2):107-15.
11. La Pietra L, Calligaris L, Molendini L, Quattrin R, Brusaferrero S. Medical errors and clinical risk management: state of the art. *Acta Otorhinol Italica* 2005;25(6):339-40.
12. Peth HA. Medication errors in the emergency department: a systems approach to minimizing risk. *Emerg Med Clin North Am* 2003;21(1):141-58.
13. Fernandez-Llamazares CM, Calleja-Hernández M-Á, Manrique-Rodríguez S, Pérez-Sanz C, Durán-García E, Sanjurjo-Sáez M. Prescribing errors intercepted by clinical pharmacists in paediatrics and obstetrics in a tertiary hospital in Spain. *Europ J Clin Pharmacol* 2012;68(9):1339-45.
14. Samaranayake N, Cheung S, Chui W, Cheung B. Technology-related medication errors in a tertiary hospital: a 5-year analysis of reported medication incidents. *Int J Med Inform* 2012;81(12):828-33.
15. Velo GP, Minuz P. Medication errors: prescribing faults and prescription errors. *Br J Clin Pharmacol* 2009;67(6):624-8.
16. Noshad H, Saleh P. Effects of Clinical Pharmacology Training on Prescription Writing Skills of Interns. *Res Dev* 2013;2(1):19-23.
17. Gharekhani A, Kanani N, Khalili H, Dashti-Khavidaki S. Frequency, types, and direct related costs of medication errors in an academic nephrology ward in Iran. *Renal Failure* 2014;36(8):1268-72.