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Drug safety crisis management in pharmacovigilance

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ABSTRACT

Serious drug reactions can cause serious side effects, including death. A report published by Lazarou et al in 1998 showed that serious drug incidents were the 4th to 6th leading cause of death in the United States. These events may lead to drug safety issues in some cases, which require a process of problem management to resolve the problem and / or prevent similar incidents. Exploring the environment of drug safety issues based on adverse events reported at the Iranian Pharmacovigilance Center from 1999 to 2012. To discuss the consequences of the successes and failures of the disaster risk management process taken against the identified problems. Methods: All drug abuse cases detected by the Iranian Pharmacovigilance Center from 1999 to 2012 were evaluated with reports of fatal consequences. All warning letters and manuscripts published by the Center were simultaneously reviewed to obtain detailed information on the identified disasters. The World Health Organization definition was used to identify drug safety issues. Results: Out of 42036 registered cases on our site, 463 deaths were recorded. The most suspected drug for fatal side effects was ceftriaxone (100 cases). Ten different drug safety issues were identified during the study and their success or failure results were assessed. There were 112 issued warning books and 17 printed manuscripts at the same time that were closely monitored for information. Conclusion: It is necessary for national drug testing centers to have problem management plans in place. This can be helpful in reducing drug-related deaths.

Keyword: Crisis medicine, Pharmacovigilance, Risk management system, ADR, EMS, WHO, Epidemiology.

INTRODUCTION

Crisis Medicine provides advanced training and understanding on how to treat a deceased person in a high-risk emergency, providing you with the background and knowledge to provide confident medical care to prevent unnecessary deaths. The methods are based on SOF medications influenced by Emergency Medicine. And advanced EMS processes. Over the past two decades, we have trained thousands of independent citizens, first responders in law enforcement, fire, and EMS to manage the injured in high-risk areas and emergency situations. Our expertise enables us to become a sought-after provider in remote areas, training soldiers, participating foreigners, and doctors in North America, Iraq, Afghanistan and East Africa. These amazing lessons are now available online. Go to crisis-medicine.com for more information. Crisis Medicine also provides guidance from board-certified Emergency Medical Technicians to fire departments and companies with EMR.

Adverse drug reactions (ADEs) can cause serious side effects including death. These side effects have been observed for many years; however they will be heavily incorporated into published studies. A report published by Lazarou et al in 1998 showed that ADE was the 4th to 6th leading cause of death in the United States. It was also estimated that the annual death toll from drug-related problems was higher than the annual deaths from breast cancer, Acquired Immunodeficiency Syndrome (AIDS) and highway accidents in that country. While some of these adverse events can be predicted based on the scientific results of pharmacology, they may involve serious side effects that make the problem a drug safety problem. The World Health Organization (WHO) defines the problem as “any random event or sequence of events leading to disruption or disruption of normal operations or activities of the organization”. It also describes disaster risk

management as "the process by which organizations, in collaboration with external stakeholders, prevent problems, or effectively manage those that occur". Table 1 shows the general characteristics of the disaster. In the field of drug safety, the WHO International Drug Monitoring Program may be considered one of the world's most effective drug safety initiatives initiated after the thalidomide disaster. The Iranian Pharmacovigilance Center (IPC) has begun its operations as a full member of the program since 1998. Several studies have been conducted to show a large proportion of drug-related deaths (3-5), however reporting on drug safety problems has not been published in the least. . This study was conducted to assess the frequency and nature of drug safety problems with fatal or other serious side effects reported to the IPC from 1999 to 2012. We believe that a positive and negative assessment of drug safety problems can be a useful tool for preventing drug-related problems. In addition the lessons learned from such reports can be used to correct the process involved in regulating drug safety. (5-6)

The new drug must pass three barriers before it can be approved by the national drug authorities. Sufficient evidence is required to prove that the new drug is of good quality, effective, and safe according to the goals or objectives it has been suggested. Although the first two approaches must be met before any authorization can be considered, the issue of safety is less certain. Security is not absolute, and can only be judged in terms of efficiency, which requires judging on the part of the regulators in determining acceptable safety limits.(6)

Drug safety monitoring is an important factor in effective drug use and quality health care. It has the potential to promote trust and confidence between patients and health professionals in medicine and contributes to improving the effectiveness of medical care. Pharmacovigilance is a clinical discipline itself - which provides a safety concept and serves as an indicator of the standards of clinical care provided in the country. Healthcare professionals are in a position to make good use of their patients' positive or negative information to contribute to medical science and to a better understanding of disease and medicine.(7)

Clinical trial regulation

In recent years there has been a dramatic increase in the number of clinical trials in developed and developing countries.(7) Clinical trials in the United States of America alone nearly doubled between 1990 and 1998. In the human genome, clinical research into new drug therapies may be even more extensive.(8)

Communication with health professionals

Another strategy to integrate drug monitoring into clinical practice is the creation of open channels of communication and extensive collaboration between health professionals and National Institutions. For this to happen, national or regional facilities need to be in place to facilitate communication between the health workers and the professional staff of the institution. Drug information centers and toxic facilities are appropriate locations for this purpose, as most toxicity reports and drug information inquiries are actually ADR. The staff of these centers is in a good position to support drug monitoring activities. (8)

Departments of education and university hospitals have become effective national and regional medical centers for a number of reasons. These include the following:

(i) Pharmacovigilance can be easily linked to a diagnostic and clinical pharmacy, as well as to local epidemiology.

(ii) The facility makes peer review of negative response reports easier and more efficient, and provides better access to hospital specialists in university departments. From such a foundation, an advisory panel of the National Center for Scientific and Medical Experts can be created

(iii) Information obtained from automatic reports may be included in the teaching of graduates and health science graduates.

(iv) Health professionals may feel confident in reporting problems and medical issues in the education sector that they know and know that they will process their reports carefully and professionally.

(v) Effective medical education strategies such as educational information (66), response to exceptional cases, reminders and requesting support from accredited professionals can be easily achieved under these circumstances.(9)

An automated reporting system for collecting suspected ADEs has been developed in Iran since 1998. Reports are sent to the IPC with yellow cards designed. These reports include both ADR and medication errors. To achieve consistency in registered data, the World Health Organization Adverse Drug Reaction Terminology (WHO-ART) has been used to record reported ADE terms. In this cross-sectional study, all ADE case reports registered on the IPC website, from 1999 to 2012 were screened for events with a fatal outcome.(10) The tendency to report during the study was also investigated. Drugs that have been suspected to contain ADEs have been found to have a fatal effect. All warning letters issued by the IPC during the study were reviewed. And all manuscripts published in collaboration with the IPC were scanned and updated (8-24). The WHO definition was used to identify drug safety issues in tested reports, warning letters and published manuscripts. (11)

Risk and crisis management

The importance of an effective system for dealing with the risks and problems of drug safety has become increasingly evident in recent years. Drug safety issues are often of global importance. The rapid spread of information in today's world means that concerns about drug safety are not limited to individual countries. The media and the general public are usually notified immediately, or even earlier, by a national regulatory authority. When problems arise, whether they are real or imagined, local security issues or concerns from abroad, regulatory authorities are expected to address them freely, effectively, completely and promptly. Many national authorities have recognized the need to develop an organizational risk management system and to communicate action in the face of adversity. There should be clear but flexible operating procedures so that their response is not delayed, unnecessarily complicated, or unnecessarily vigilant (unnecessary monitoring may lead to product outsourcing in the market even when there may be no justification and a less aggressive and aggressive response. It may be appropriate). In such cases, if there is a significant difference in security information between pre-registration tests and the actual status used, there is a good chance that the regulatory response would be incorrect. In the event of problems, the

regulatory authority has the power to suspend registration, impose special conditions, or severely limit the use of certain patients or providers. The authority may require manufacturers to modify product details in a certain way. These decisions are often conveyed by warnings about drugs, general letters to doctors and pharmacists, media statements, websites, newsletters and journals, depending on the nature and urgency of the message and the audience. (12)

RESULTS

The 42036 cases registered on our website, 463 deaths (1.1%) were recorded from 1998 to 2012. of reported adverse reactions (Table 2). Ceftriaxone was the most common drug that caused a fatal reaction in 100 cases. There were 112 information letters issued by the IPC during the study. Also, there were 17 published manuscripts in collaboration with the IPC that were reviewed.(13)

1. Diclofenac sodium induced paralysis IPC received a new signal as sciatic nerve injury following the intramuscular injection of diclofenac sodium in 1998. The reaction was noticed 3 years after the product market was leaked in Iran. From June 1998 to June 2002, 249 reports of peripheral nervous system disorders including mobility, foot pain and sciatic nerve palsy were accepted by the IPC (chart 1). Examination of the hypothesis produced by the unusual but critical reaction caused by hemiplegia was reported as a result of an accidental intrathecal injection of the product. Product distribution was immediately suspended until a response was identified. Letter of information issued by the IPC.

2. Bupivacaine sedatives and paraplegia Bupivacaine, as a anesthetic, was introduced to the Iranian market from a new manufacturer. The bottles were not as specific with intrathecal injections as before. In 2001, two cases of death and 2 cases of hemiplegia were reported as a result of an intrathecal injection by mistake of the product. Product distribution was immediately suspended until a response was identified. Letter of information issued by the IPC.

3. Deaths due to error in animal vaccine injection: In 2002, there was an error in the recording, distribution, distribution and management of animal solution (CPM) system which resulted in one death report. Distribution was stopped immediately and a letter of notification was issued by the IPC.

4. Mioflex Death Mioflex is the trade name for succinylcholine, a drug that kills nerves. There is another brand name "Myoflex" which is an analgesic cream. Due to the similarity of the name, the product was mistakenly used as a painkiller, in 2006, which resulted in two deaths. There was an error in the wording, distribution, distribution, management and use of the product. Distribution was immediately stopped at public pharmacies and an information letter issued by the IPC.

5. Deaths caused by intravenous immunoglobulin (IVIG) In 2003, there were 3 deaths due to discoloration of IVIG. The product was returned immediately and a warning letter was issued by the IPC.

6. Tramadol causing death after reports of suspected deaths and coma caused by tramadol in 2003, the product was banned for use in hospitals only. Also the product strength has changed from 100 mg to 50 mg per vial. And the warning letter was issued by the IPC.

7. Counterfeit lidocaine that caused death in 2005, the IPC received 11 reports of seizures, 2 fatalities and 2 fatalities in children following a counterfeit lidocaine injection. The warning letter was issued by the IPC and the counterfeit product was removed from the market.

8. Ceftriaxone causing death between 2004 and 2012, 100 cases of ceftriaxone deaths were reported to the IPC, making the product as the most common drug responsible for registered adverse events with fatal side effects. Chart 3 shows the mortality rate caused by ceftriaxone compared to one year. Actions taken in response to this drug safety problem include: 5 warning letters issued by the IPC, evaluating the product quality and changing the product information to include "IV delivery is required". (14)

DISCUSSION

Drug-related deaths can lead to a silent epidemic of traumatic events, if left unchecked. Based on the results provided, it seems that although successful outcomes are achieved in managing drug safety problems, there are still gaps in overall success. (15) The consequences of the failures mentioned in the outcome section, e.g., delays in responding to a problem, lack of necessary regulation and / or inability to identify the underlying cause of the reaction, highlight the need for more detailed programs for drug control problems. Logical Framework (LFA) and PESTEL are tools for designing management tasks and developing project decision-making processes. The LFA is also a strong foundation for project monitoring and evaluation. We recommend the 9 LFA steps outlined below to improve the management of drug safety issues. (16)

1. Step one: Content analysis of a drug safety risk management project this project is based on the context of drug safety. It is a sub-program of an international drug monitoring program. All processes that impact on the main drug safety process should be reviewed. These processes include: production, reporting, systematic communication, packaging, labeling, word design, integration, distribution, distribution, management, education, monitoring and implementation. Sometimes it is necessary to make changes to each specified procedure in order to further control the drug safety crisis. (17) All threats, weaknesses, strengths and opportunities should be noted in this step. Table 5 shows the PESTEL sample method for managing drug safety issues.

2. Stakeholder analysis Table 6 shows the typical participants involved in drug safety issues. (18)

3. Problem analysis Root analysis- cause should be performed at this stage, e.g., in the case of mioflex, there have been errors in different levels of drug administration. A problem tree can be helpful in this phase. (19)

4. Purpose analysis Objectives should be discussed at different levels.

a. Overall objectives: e.g., improving drug safety.

b. Purpose: e.g., to prevent adverse drug-induced adverse effects on drug safety.

c. Consequences: e.g., abrupt cessation of an adverse event seen in a drug safety crisis. (19-20)

5. Career planningit is recommended that you prepare a list of tasks required to manage drug safety issues. (20). These activities can be divided into two types. The first group covers the tasks required to manage a crisis situation. The second group includes the necessary activities to prevent similar problems in the future. (21)

6. Resource Planning It is recommended that a trained team be prepared to assess drug safety issues, predict budget benefits, issue necessary rules and regulations and prepare the necessary tools. Indicator recognition indicators Success indicators should be determined and its testing tools should be predictable, e.g., for example Mioflex, immediate recall of a product from public pharmacies and no other reaction reactions can be considered test indicators to test and scan the IPC database. (22)
7. Risk analysis: Factors that may have a negative impact on a drug safety risk management project should be considered and alternatives considered,in the case of counterfeit lidocaine, a number of counterfeit production facilities should be considered. (23)
8. Critical analysis In this step, the social, legal, political and financial aspects of the drug safety control project should be reviewed, e.g., it should be determined what information can be exchanged regarding confidentiality. How public information should be made without creating fear among the people. (24)

Health Professionals

The success or failure of any automated reporting system depends on the visible participation of journalists. Although recently introduced limited patient reporting systems, health professionals have been the main providers of reports of suspected ADR incidents throughout the history of drug testing. (25). Initially doctors were the only specialists invited to report as a judgment that the disease or drug was causing a specific symptom through the use of a different diagnostic skill. It was argued that accepting ADR reports from physicians only, would ensure high quality information and reduce the reporting of unrelated, informal organizations. Studies have shown, however, that different categories of health professionals will identify different types of drug-related problems. Only by inviting reports from all professionals involved in patient care where it will be possible to diagnose a wide range of problems. Related to medical treatment. If, for example, only general practitioners contribute to the collection of information, medications used primarily by specialists will not be covered. (26). To get a true picture, all sectors of the health care system will need to be involved, such as public and private hospitals, general practitioners, nursing homes, retail outlets, and traditional medicine clinics. Wherever medicine is used there should be a need to monitor and report unwanted and unexpected medical incidents. (27)

CONCLUSION

Control of drug safety issues is an important part of pharmacovigilance. It is necessary for national drug treatment centers to have systems in preventing the occurrence of drug safety problems is an important part. Adopting this precise system drug-related illnesses and deaths can be reduced up to great extent.

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