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Review Article

PHARMACOVIGILANCE SYSTEM IN INDIAA.Vedavyas*¹, Dr. B.V.S. Lakshmi², Dr. Asha Sara Stephen³.¹Department of Pharmacy Practice, Malla Reddy Hospital, Hyderabad, Telangana, India-500055²Head of Department, Malla Reddy College of Pharmacy, Hyderabad-500014, India³ Faculty of Pharmacy, Malla Reddy College of Pharmacy, Hyderabad-500014, India**Abstract:**

Pharmacovigilance is an important and integral part of clinical research. Pharmacovigilance is “defined as the pharmacological science relating to the detection, assessment, understanding and prevention of adverse effects, particularly long term and short term adverse effects of medicines. This addresses what exactly is Pharmacovigilance? What do we know of its benefits and risks, challenges and the future hold for pharmacovigilance in Indian medicine. Here the main focus on the aims and role of Pharmacovigilance in medicines regulation and their Partners. This article describes and discusses the National programme of pharmacovigilance in India. There role in collecting the reports ADRs of medicines. Further effectiveness and risk assessments of therapies are been discussed. The important role played by health care professional, pharmaceutical industries, media, and programmes carried by WHO. Finally the conclusion describes the major challenges and achievements for the future pharmacovigilance programme and toxicity is not so critical if botanicals are used in traditional forms.

Key words: *Pharmacovigilance (PV), vedavyas, pharmacovigilance system.***Corresponding author:**

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INTRODUCTION:

Pharmacovigilance is the science associated with detection, assessment, understanding and prevention of adverse effects of drugs. According to the Pharmacovigilance definition given by WHO, it is "the science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other possible drug-related problems. Recently, its concerns have been widened to include herbals, traditional and complementary medicines, blood products, biological, medical devices and vaccines"

Pharmacovigilance (PV) was officially introduced in December 1961 with the publication of a letter (case report) in the *Lancet* by W. McBride, the Australian doctor who first suspected a causal link between serious fetal deformities (phocomelia) and thalidomide, a drug used during pregnancy: Thalidomide was used as an antiemetic and sedative agent in pregnant women. In 1968, the World Health Organization (WHO) promoted the "Programme for International Drug Monitoring", a pilot project aimed to centralize world data on adverse drug reactions (ADRs). In particular, the main aim of the "WHO Programme" was to identify the earliest possible PV signals. The term PV was proposed in the mid-70s by a French group of pharmacologists and toxicologists to define the activities promoting "The assessment of the risks of side effects potentially associated with drug treatment".

PV is the science of collecting, monitoring, researching, assessing and evaluating information from healthcare providers and patients on the adverse effects of medications, biological products, blood products, herbals, vaccines, medical device, traditional and complementary medicines with a view to identifying new information about hazards associated with products and preventing harm to patients. The challenge of maximizing drug safety and maintaining public confidence has become increasingly complex. Pharmaceutical and biotechnology companies must not only monitor, but also proactively estimate and manage drug risk throughout a product's lifecycle, from development to post-market.

PV is particularly concerned with ADRs, which are drug responses that are noxious and unintended, and which occur at doses normally used for the prophylaxis, diagnosis or therapy of disease, or for the modification of physiological function. Continuous monitoring of drug effects, side effects, contraindications and outright harmful effects which could result in a high degree of morbidity, and in some cases, even mortality, are essential to maximize benefits and minimize risks. No degree of care and caution at the pre-clinical and clinical testing stages

can guarantee absolute safety, when a drug is marketed and prescribed to large populations across the country and outside. Because clinical trials involve several thousands of patients at most, less common side effects and ADRs are often unknown at the time a drug enters the market. Post marketing PV uses tools such as data mining and investigation of case reports to identify the relationships between drugs and ADRs. The drug regulatory agencies have the responsibility of having a well-established PV system to monitor ADRs during the drug development phase and later during the life time of a marketed drug. A complex and vital relationship exists between wide ranges of partners in the practice of drug safety monitoring such as government, industry, health care centers, hospitals, academia, medical and pharmaceutical associations, poisons information centers, health professionals, patients, consumers and media. Sustained collaboration and commitment are vital if future challenges in PV are to be met in order to develop and flourish.

Since very few new drugs were discovered in India and hardly any new drug was launched for the first time in India in the past, there was no major compulsion to have a strong PV system to detect ADRs of marketed products. The experience from the markets where the drug was in use for several years before its introduction in India, was used by the companies and the regulatory agencies to assess the safety parameters and take corrective actions, such as the withdrawal or banning of the drug in question. The evolution of a new patent regime in the Indian pharmaceutical and biotechnology industries as a Trade Related Intellectual Property Rights and Services (TRIPS) makes it incumbent upon India to no longer copy patented products and market them without license from the innovator company. The leading Indian companies, realizing the compulsions of the new regime, have already initiated investments of substantial resources for the discovery and development of new drugs needed for both Indian and International markets. This in turn means that during the coming year, research and development by the Indian pharmaceutical and biotech companies will hopefully lead to new drugs based on pre-clinical and clinical data generated mostly in India. In such cases, the Indian regulatory agencies cannot count on the experience of other markets to assess the incidence and prevalence of importance of a properly designed PV system in India. With the Indian companies' capacity to develop and market new drugs out of their own research efforts, it is important that adequate PV standards are introduced to monitor ADRs of products first launched in India.

PHARMACOVIGILANCE SYSTEM:

Pharmacovigilance system studies the long term and short term adverse drug reaction or simply stated-side effects of medicines. Pharmacovigilance system involves collection, monitoring, researching upon, assessing and evaluating information received from health care workers such as doctors, dentists, pharmacists, nurses and other health professionals for understanding the adverse drug reaction. Pharmacovigilance definition includes monitoring of all pharmaceutical drugs and also other medical products including vaccines, X-ray contrast media, traditional and herbal remedies etc. especially when the reaction is unusual, potentially serious or clinically significant.

Pharmacovigilance and World Health Organization-WHO, After the thalidomide disaster in 1961, WHO established its Programme for International Drug Monitoring jointly with the WHO Collaborating Centre for International Drug Monitoring, WHO promoted Pharmacovigilance at the country level. At the end of 2010, 134 countries were part of the WHO-PV Programme. The aims of PV are, to augment patient care and patient safety in relation to the use of medicines; To upkeep public health programmes by providing reliable, balanced information for the effective assessment of the risk-benefit profile of medicines. UMC manages chief aspects of the mounting universal Pharmacovigilance set-up of the now more than 130 countries, known as the WHO Programme for International Drug Monitoring. WHO Collaborating Centre follows WHO policies and work in close relation with it does headquarter. UMC is organizationally and professionally discrete from WHO itself. The WHO Program for International Drug Monitoring offers a forum to the member states of WHO in the monitoring of drug safety. The individual case reports of ADRs are collected under this program and stored in one common database. Currently it has more than 3.7 million case reports. The Uppsala Monitoring Centre is answerable for the collection of ADRs data from around the globe and especially from member states. Reports are sent to the UMC by member countries and here they are processed, evaluated and entered in to the WHO International database. After detailed evaluation and expert review there is availability of several ADRs reports to particular drug which leads to the detection of a signal that is an alert about a possible hazard communicated to the member countries. ADR reports are assessed locally and may lead to action within the country India has a large patient pool and healthcare - professionals still ADR reporting is in its early years.

IMPORTANCE OF PHARMACOVIGILANCE:

When a pharmaceutical drug is introduced in the market there are still a lot of things that are unknown about the safety of the new drugs. These medicines are used by various patients for different diseases. These people might be using several other drugs and must be following different traditions and diets which may adversely affect the impact of medicine in them. Also the different brands of same medicine might differ in the manner of their production and ingredients. Additionally, adverse drug reactions might also occur when drugs are taken along with traditional and herbal a medicine that has also to be monitored through pharmacovigilance. In some cases, adverse drug reaction of certain medicines might occur only in one country's or region's citizens. To prevent all undue physical, mental and financial suffering by patients, pharmacovigilance proves to be an important monitoring system for the safety of medicines in a country with the support of doctors, pharmacists, nurses and other health professionals of the country.

Pharmacovigilance in India:

The Central Drugs Standard Control Organization (CDSCO), Ministry of Health and Family Welfare, Govt. of India launched the National Pharmacovigilance Programme (NPP) in November, 2004. The pharmacovigilance in India was based on the WHO recommendations made in the document titled "Safety Monitoring of Medicinal Products: Guidelines for Setting Up and Running a Pharmacovigilance Centre". The whole country is divided into zones and regions for operational efficiency. CDSCO, New Delhi is at the top of the hierarchy followed by two zonal pharmacovigilance centers viz, Seth GS Medical College, Mumbai and AIIMS, New Delhi.

To summarize the basic knowledge about pharmacovigilance, it can be said that the information obtained from reports about adverse drug reactions promote drug safety on a local and national level. These reports are entered into the national adverse drug reaction database and analyzed by expert reviewers justifying the whole pharmacovigilance system.

THE CHALLENGES OF PHARMACOVIGILANCE IN INDIA:

The biggest challenge facing the PVPI is the gross underreporting of adverse effects. There are many reasons for this, including lack of medical expertise in drug administration and adequate skilled resources in PV, and inadequate nationwide awareness of PV. The other challenges are infrastructure which are still conservative, wide time interval between guidelines

and laws, orthodox attitude to new drug research, and PV and regulatory inspections that are almost non-existent. The system needs to be refined with the help of PV experts in collaboration with information technology (IT) because India boasts of a highly developed IT sector. Since PV deals with large numbers of ADRs, it would be wise for PV experts to collaborate with software professionals to develop and build a robust system. Software programs developed can be used for collection and analyses of data sets, determining trends of drug usage in various disease areas, compliance, medication errors and drug interactions leading to ADRs. Moreover, with more clinical research and PV outsourcing work now being conducted in India, it has been worthwhile for the DCGI to invest in a robust PV system to enable assessors and decision makers to analyze safety data and take regulatory decisions without the need to depend on other countries.

However, sometimes ADRs are not recognized by the physicians on admission and ADRs may be responsible for the death of many patients. Furthermore, the financial cost of ADRs to the healthcare system is also vast, in the market, when new medicines are launched without long term safety studies by the regulatory authorities, patients self-medicate and switch from prescription-only medicines (POM) to over-the-counter (OTC) more widely, and this is the main reason of exposing itself to ADRs. In the earlier period, India's regulatory agencies and drug companies based their safety assessments on experiences derived from long-term use. In recent years, many Indian companies are increasing their investment in research and development and are enhancing their capacity to develop and market new drugs with their own research efforts. Once a product is marketed, new information will be generated, which may have an impact on the benefit-risk profile of the product. The detailed evaluation of the new information generated through PV activities is important for all products to ensure their safe use. Hence, DCGI should take some tough decisions and make commitments to make PV mandatory and start the culture of PV inspections.

FUTURE PROSPECTS:

As future prospects increase, PV systems capable to detect new ADRs and taking regulatory actions are needed to protect public health. Little emphasis has been put into generating information that can assist a healthcare professional or a patient in the decision-making process. The gathering and communication of this information is an important goal of PV. Information about the safety of drug active surveillance is necessary. When develop new methods for active post-marketing surveillance, one

has to keep in mind that the important to collect complete and accurate data on every serious reported event. Spontaneous reporting is a useful tool in generating signals, but the relatively low number of reports received for a specific association makes it less useful in identifying patient characteristics and risk factors. PV methods must also be able to describe which patients are at risk of developing an ADR. As a source of information, the PV approach would be consistent with the growing patient involvement in drug safety. The PG could play a role in identifying individual risk factors for the occurrence of certain ADRs. In the future, PV has to concentrate on the patients as a source of information in addition to the more traditional groups, such as the health professionals.

At present, the DCGI should act quickly to improve PV so as to integrate Good Pharmacovigilance Practice (GPP) into the processes and procedures to help ensure regulatory compliance and enhance clinical trial safety and post marketing surveillance. An appropriately working PV system is essential if medicines are to be used carefully. It will benefit healthcare professionals, regulatory authorities, pharmaceutical companies and the consumers. It helps pharmaceutical companies to monitor their medicines for risk. Post-marketing PV is currently a challenging and laborious process, not only industry-wide, but also for regulatory agencies.

The aim of the PV is to receive the information, documentation of the work and knowledge online while giving priority to the new and important safety issues. Non-serious events have less priority than serious events but important in comparing the changes in health, although they are also screened routinely. In present time, GlaxoSmithKline has created a powerful new approach to PV, integrating traditional, case-based PV methods with disproportionality and data visualization tools. These tools exist within a system framework that facilitates in-stream review, tracking of safety issues and knowledge management. This very innovative tool and the processes will help to advance PV by improving efficiency and providing new analytical capabilities. Similar approach may be adopted by pharmaceutical companies for prompt detection and analysis of ADRs. Transparency and communication would strengthen consumer reporting, which are positive steps towards involving consumers more in PV.

CONCLUSION:

Despite its 40-year history, pharmacovigilance remains a dynamic clinical and scientific discipline. It continues to play a crucial role in meeting the challenges posed by the ever increasing range and

potency of medicines, all of vitamins unpredictable potential for harm. The PV in India has become an important public health issue as regulators, drug manufacturers, consumers, and healthcare professionals are faced with a number of challenges. The PV in India continues to grow, evolve, and improve. India is the largest producer of pharmaceuticals and now emerging as an important clinical trial hub in the world. Apparently, the requirements for professional specialization, a combined view on PGx and clinical requirements are needed. That helps to identify factors that increase the risk of unwanted outcomes from drug therapy and prior to commencing drug treatment and in tailoring drug treatment for individual patients. The PV has also involved in Data Mining Technology in spontaneous reports submit to the national surveillance systems. The PVPI is coordinated at IPC through NCC under the control of Indian Government to generate an independent data on safety of medicines, which will be at par with global drug safety monitoring standards. National and regional PV systems are well-adapted bodies, attuned to the intricate collection and analysis of ADR data that leads to timely alerts and interventions to protect population health. Furthermore, it is responsible in India of entire campaign to improve PV knowledge and increase the number of ADRs reports up to the gold standard level established by the WHO. The adverse events reported by PV system will potentially benefit to the community due to their proximity to both the population and public health practitioners, in terms of language and knowledge of the lifestyle and habits of patients, enables easy contact with reporters, for example by telephone, Email, text messages by mobile phones. The development of new and effective medicinal products makes a positive contribution to the health and well being of individuals. However, there is a need to improve PV systems to more effectively monitor and take action on safety issues associated with medicines to enhance their contribution to public health. Hence, PV for medicinal product safety to help the patients get well and to manage optimally or ideally, avoid illness is a collective responsibility of industry, drug regulators and clinicians and other healthcare professionals. The financial support and future projects should help to achieve a more comprehensive PV activity in India.

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