



Review Article

PHARMACOVIGILANCE IN GERIATRICS

Kiran Nagaraju^{1*}, Manasa S², Vijendra R³, Chandrasekhar H. R⁴

¹Assistant Professor, Department of Pharmacy Practice, VIPS, Bangalore, Karnataka, India

²Pharm D student, Department of Pharmacy Practice, VIPS, Bangalore, Karnataka, India

³Assistant Professor, Department of Pharmacology, KIMS Hospital and Research Centre, Bangalore, Karnataka, India

⁴Assistant Professor, Department of General Medicine, KIMS Hospital and research Centre, Bangalore, Karnataka, India

*Corresponding Author Email: kirantoxicology@gmail.com

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ABSTRACT

Pharmacovigilance has gained significant importance with increased number of drugs molecules entering the market and the increase in the number of drug recalls due to the involvement of high health risks incident. It has become a critical phase in clinical development program to improve patient care and safety in relation to the use of medicines and also all medical and paramedical interventions. It also contributes to the assessment of benefits, harm, effectiveness and risk of medicines and encouraging their safe, rational and more effective drug use. India rates below 1 % in pharmacovigilance as against the world rate of 5 %, where pharmacovigilance is a fundamental driving principle in safeguarding public health. Due to the high profile issues with drug safety have highlighted the need not only to improve post marketing pharmacovigilance but also to identify drug candidates with good safety or benefit profiles. There are many challenges and barriers in the pharmacovigilance process which are from health professional like lack of training or awareness, due to self medication from patients, counterfeit drugs etc. which could be overcome by monitoring each patient using certain drug during the treatment by follow ups and emphasize on medication reconciliation during periods of care transition, including admission and discharge and subsequent follow up in the ambulatory settings.

Keywords: Pharmacovigilance, Pharmacists, public health, Geriatric, Polypharmacy

INTRODUCTION

Pharmacovigilance is defined as the science and activities concerned with the detection, assessment, understanding and prevention of adverse reactions to medicines. Main goal of pharmacovigilance in geriatric is to improve the safe and rational use of medicines and thereby improving patient care, health of the society¹. According to WHO's definition an ADR is a response to a drug that is noxious and unintended and occurs at doses normally used in human for the prophylaxis, diagnosis and treatment of diseases, or for modification of physiological function. Lazarous *et al.* estimated that ADR's were the fourth to sixth largest cause of death in United States¹. The detection of adverse drug reactions has become increasingly significant because of introduction of large number of potent toxic chemicals as drugs in the last two or three decades. WHO has intervened seriously in this matter and established an international adverse drug reactions monitoring centre at Uppsala, Sweden, which in collaboration with national monitoring centers in around 70 countries. As per ADR monitoring in India, very little attention has been given so far and few original studies have been done in this regard. In India only few ADR monitoring centers right now and lot of efforts is required in order to collect ADR data which may generate safety surveillance of billions of therapeutically active substances either alone or combinations². Adverse drug reactions occur more frequently in older people, where most developed world countries have accepted the chronological age of 65 years as a definition of elderly or older person, at the moment, there is no United Nations standard numerical criterion, but the UN agreed cutoff is 60+ years to refer the older population. The ageing process is of course a biological reality which has its own dynamic, largely beyond human control, but the reality is much more important than the figures, hence closer pharmacovigilance studies are needed in the older age group³.

People aged 65 and over make up approximately 13 % of the total population and consume about 40 % of all type of medications⁴. Indian elderly represent 12.8 % of the entire global elderly population⁵. Geriatric is an upcoming field in India. The field of ageing and health has become a dominant area of concern in the 21st century. This is mainly due to an increase in the numbers of older people in both developed and developing countries. In the year 2000, there were an estimated 600 million people aged 60 years and above in the world. By 2025, this would double to about 1.2 billion people and by 2050 there will be 2 billion with 80 % of them living in developing countries⁶. In geriatrics, ADR's occur due to multiple comorbidities, as increase in age there will be several incidence of one or more chronic conditions, like Hypertension, Diabetes, asthma, thyroid disease, arthritis, depression etc., where comorbidity will lead to use of polypharmacy. Based on data from the medical expenditure panel survey, 91.5 % of adults aged 65 years or older in 2005 had at least one chronic conditions and 96.5 % of prescription medication expenditures were attributable to those with at least one chronic condition, more than one half the medical expense of this group was associated with treatment of chronic conditions⁷. Polypharmacy is defined as concurrent use of multiple medications by a patient. Polypharmacy had a major influence on the occurrence of ADR's with a total of 64.28 % with patients using four or more medications⁸. A review of several studies indicated that patients aged > 65 years use on an average 2-6 prescribed medications and 1-3.4 nonprescribed medication which can lead to drug interactions⁹. A study by Joshi *et al.* showed an adverse drug reaction rate of 7 % in patients taking 6 – 10 drugs increasing to 40 % in those taking 16 – 20 drugs. According to Schmader *et al.* study on 208 elderly patients 55 % were taking drugs without an indication, they also found one third of patients were taking ineffective drugs and 16 % had a

therapeutic duplication in their medication regimens⁸. Polypharmacy is a common occurrence of ADR's in elderly patients due to a variety of reasons like increasing number of chronic health conditions, patients being treated by multiple prescribing physicians, availability of nonprescription drugs, inadequate patient knowledge of medications and medical conditions⁶. Polypharmacy also increases incidence of drug interactions, noncompliance which in turn leads to increase in hospital admissions and thus health expenditure⁶. The factors that can lead to polypharmacy are both from physician and patient. Physician's factors that play a main role in polypharmacy include; prescribing drugs without sufficiently investigating clinical situations, providing unclear, complex or incomplete instruction on how to take medications, not conducting a medication review on regular basis, ordering automatic refill without adequate follow up and lack of knowledge of Geriatric clinical pharmacology may lead to inappropriate prescription⁸. Patient factors like not knowing about what medication they are taking, no reporting about any symptoms they are suffering, also influences. Polypharmacy can be appropriate when multiple drug regimens are necessary for the treatment of conditions and are carefully monitored by clinicians for achieving a therapeutic goal and drug related problems⁷. Minimizing or controlling polypharmacy requires periodic evaluation of patient's drug regimen; the evaluation may reveal the need to change the prescribed drug therapy. Indian prospective studies focusing on polypharmacy resulting in ADR in elderly is lacking, which can be taken up by pharmacists to evaluate the condition by a follow up of the patients with high risk such as comorbidity, polypharmacy, adherence to improve the quality of life of the patients. Adverse drug reaction also occurs due to decreased hepatic metabolism, progressive deterioration of renal function⁹, slower homeostatic responses, inappropriate prescription where like wrong dosing, incorrect frequency of administration, prescribing ineffective medication duplicate therapy About one fourth of the ADR's are due to inappropriate medication use⁴. Factors connected with very old age such as frailty, falls, abnormal sensitivity to medications and polyopathy, all directly impact on adverse drug reaction occurrence¹⁰. An average rate of ADR related hospital admission is 16.6 % in the elderly compared to 4.1 % in younger patients, where 88 % is preventable⁷. According to prospective study of 1756 patients in Italy, 91.2 % ADR related hospitalization, gastrointestinal disorders (47.1 %), bleeding and clotting disorders (19.6 %) and cardiovascular disorders (12.7 %) were the most frequent ADR's, drugs like NSAID's (23.5 %). Oral anticoagulants (12.7 %), low dose aspirin (13.7 %), digoxin (12.7 %) were the drugs frequently involved in ADR's¹¹. other drugs which cause ADR are antibiotics, hypoglycemic, antineoplastic agents, biologicals and herbal preparations⁷. ADR's are often difficult to detect in older patients because of their atypical or nonspecific nature like lethargy, confusion, lightheadedness, or falls¹². Hence the clinicians must look for the side effects of the drugs to identify the ADR's. Since most ADR's in the elderly are predictable and therefore preventable by using the knowledge of pharmacological principle and how ageing affects kinetics process⁹. There is increasing interest among clinicians and researchers to find ways to reduce the occurrence of ADR. The main determinant in this reduction is the correct identification of ADR. Not all clinicians, pharmacists, are able to accurately identify ADR and this is due to many reasons including education, expectations and previous

experience. In an attempt to improve identification of ADR in the elderly patients, it is advisable to consider the side effects of medication high in the differential diagnosis of clinical symptoms and Knowledge of most common ADR and frequently responsible agents in this age group. When a drug is suspected as the cause of an acute change in a patient's clinical conditions, they should initially consider the known adverse events of the particular drug, if the suspected reaction are known toxicity of a particular drug, then the link between the onset of reaction and drug administration should be established and other conditions that may predispose patients to such reaction should be considered which may be polypharmacy, previous experience by patients and objective evidence¹³. Always weigh the risks and benefits for adding new drugs to patients existing drug therapy¹². The basic rule in the process of identifying an ADR is simply to ask oneself 'could this patients condition be due to one or more of the drugs he/she has taken?' Additional monitoring and attention towards patients who are at high risk could reduce the impact of ADR both in terms of cost and quality of care¹³. Measures have to be taken to ensure frequent patient follow ups. Reassessing the need of drugs in the present dose regimen has to given priority during routine follow ups; any drug related problem has to be assessed^{12,14}. Pharmacists should play a key role for both identifying potential reactions and assisting in patient education. Hence pharmacists can have a good communication in developing an effective therapeutic partnership with the patient and with health professionals which may lead to reduction in the adverse effect which can occur with medications⁹. Health care professionals should ensure that geriatric patients get information about their medicines to improve the quality of life and monitor the health outcome. Adverse drug reaction monitoring and reporting activity is in its infancy in India. The important reason is lack of awareness and lack of interest of health care professionals in ADR reporting and documentation. A study conducted to determine the level of awareness of physicians about ADR and the extent of their involvement in pharmacovigilance activities showed that despite good observation and knowledge of ADR among physicians the rate of ADR's reporting and documentation is very low¹⁴. Hence awareness about reporting ADR's should be improved. Pharmacists can play a important role in reporting ADR, by monitoring the patients for both therapeutic and toxic effects of the drug, along with medication adherence, which can be done by regular follow up of the patients assess their conditions and if any problems resolve it as soon as possible and improve the quality of care and health of the society.

CONCLUSION

A scope of closer pharmacovigilance studies are much needed in the older age group due to polypharmacy, which can cause ADR's leading to hospital readmission and the direct and indirect treatment cost to treat the ADR's.

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