IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 15, Issue 7 Ver. VI (July. 2016), PP 62-64
www.iosrjournals.org

Elderly and poly pharmacy- A review

Dr.A.Meena kumari[1], Dr.P.Raghunatha Rao[2]
[1](Department of pharmacology, Guntur Medical College/ Dr.NTR University, India)
[2](Department of pharmacology, Guntur Medical College/ Dr.NTR University, India)

Abstract: *Polypharmacy refers to use of multiple medications by a patient .Elderly patients having multiple chronic diseases are at more risk of polypharmacy. Lack of clear knowledge, usage of over the counter medications ,taking various medicines prescribed by multiple physicians and usage of alternate medications like herbs also increases the risk of polypharmacy.It can lead to potential risk of injuries ,delirium, functional and cognitive impairment and falls especially with cardiovascular and psychoactive medications, drug drug interactions ,drug disease interactions,health care costs,unplanned hospitalizations, adverse drug reactions.*
This can be managed by avoiding prescriptions for minor nonspecific or self limiting complaints and by accurate drug history ,regular medication review. Monitoring the patient carefully is much essential in view of the paucity of clinical trial data in frail older patients and due to marked increase in prevalence of adverse drug reactions.
Keywords: *Causes, Effects, Elderly, Management, Polypharmacy*

I. Introduction

Advances in therapy has increased the life span with an increase in the number of patients above 65 years of age .These patients suffer from multiple co-morbidities like hypertension, Diabetes mellitus, Arthritis, Cancer cardiovascular diseases & neurological problems warranting the use of more number of drugs compared to younger adults [1]. In old age there is reduced cardiac output and poor blood circulation causing delayed absorption, decreased metabolism by shrunken liver and decreased renal function leading to decreased excretion of drugs. As a result the drugs remain in the body for long periods and get concentrated in discrete parts of the body leading to increased risk of errors and adverse drug reactions.

Use of more number of drugs may result in increased drug-drug interactions. In addition to using multiple prescribed medications, elderly are also major users of complementary and alternative medicines and may not reveal this. So,they are at great risk of herb-drug interactions.

As per the World Health Organization, Polypharmacy refers to use of multiple medications by a patient [2]. It is considered as the administration of more medications than are clinically indicated [3]

Incidence of polypharmacy among elderly is reported to be 20 to 40% [4]

Goals of our study by reviewing various articles in literature are:

1. To assess the causes for polypharmacy
2. To know the effects of polypharmacy
3. To find out measures to reduce & manage polypharmacy

II. Causes Of Polypharmacy

Elderly patients have much co-morbidity requiring various medications.Some of the patients take over the counter medications and herbal preparations without a clear knowledge of their efficacy and adverse reactions. When side effects occur for some drugs, they are misinterpreted as symptoms of a new disease and additional/additive drugs are prescribed by the practitioner. Patients often visit several physicians without revealing the previous prescriptions and continue to take the medications prescribed by all the physicians without the knowledge of drug-drug interactions and over dosage [5]

III. Effects Of Polypharmacy In Elderly

Polypharmacy is associated with increased hospital admissions, functional and cognitive impairment and geriatric syndromes like delirium, Fragility and mortality [6]. In addition to these risks elderly are more prone to drug-drug interactions due to various pharmacokinetic and pharmacodynamic variations [7].The number of drug-drug interactions rises sharply when 5 or more medicines are taken concurrently. The findings of Kristina Johnell are that the probability of potentially serious drug- drug interactions (D.D.Is) decreases with increasing age among the elderly women than elderly men [8, 9].With patients living longer with more chronic diseased states requiring drug therapy, the risk of drug-disease interactions should be a concern for healthcare providers [10].In addition, Polypharmacy contributes to health care costs to both the patient and the healthcare system. A retrospective cohort study found that polypharmacy was associated with increased medical expenditure due to

risk of taking a potentially inappropriate medication with an increased risk of outpatient visits, and hospitalization leading to 30% increase in medical costs [11]. Another study conducted in Sweden reported that those taking 5 or more medications had a 6.2% increase in prescription drug expenditure and those taking 10 or more medications had a 7.3% increase [12]. Polypharmacy increases the risk of adverse drug reactions which was concluded by a population based study where outpatients taking 5 or more medications had an 88% increased risk of experiencing an Adverse Drug Event (ADE) compared to those who were taking fewer medications [13]. Unplanned hospitalizations due to A.D.E's was almost 4 times more in elderly taking more than 5 medications than those taking less[14].The drugs causing Drug related problems(DRPs) in this review were not those listed in the Beers list of inappropriate drugs in the elderly [15]. Functional and cognitive impairment in elderly are strong predictors of hospital admissions as per the meta-analysis of E Gaugler[16]. Prevalence of falls strongly increases with age being more common in women than men [17]. The risk of falling increased significantly with the number of drugs used per day. One prospective cohort study concluded that the use of 4 or more medications was associated with increased risk of falling and the risk of recurrent falls [18]Usage of diuretics, anti arrythmic & psychotropic drugs proved to increase the risk of falls in patients as per one Meta analysis conducted in 1999 by Leipzig RM [19] Medication non-adherence is associated with potential disease progression, treatment failure, hospitalization and A.D.Es, all of which could be life-threatening [20]

IV. Measures To Reduce And Manage Polypharmacy

Measures can be taken to limit polypharmacy to its truly legitimate and appropriate needs. It can be prevented by avoiding prescriptions for minor nonspecific or self limiting complaints. An accurate drug history is essential for patients on multiple drugs. This can be achieved by a regular medication review. Several studies have proposed possible methods of reducing the number of medications for elderly patients. In prescribing to elderly patients the broad functional outcomes are usually the major therapeutic goal rather than the specific disease based outcomes. Sarah N. mentioned certain steps to be followed while prescribing in elderly patients [21] like:

1. Determining the efficacy of particular drug in elderly
2. Determining the likely hood of adverse drug events in elderly
3.Discussing the harm benefit analysis with the patient and then to decide the dosage regimen considering the age related changes in the disposition of and response to medications.

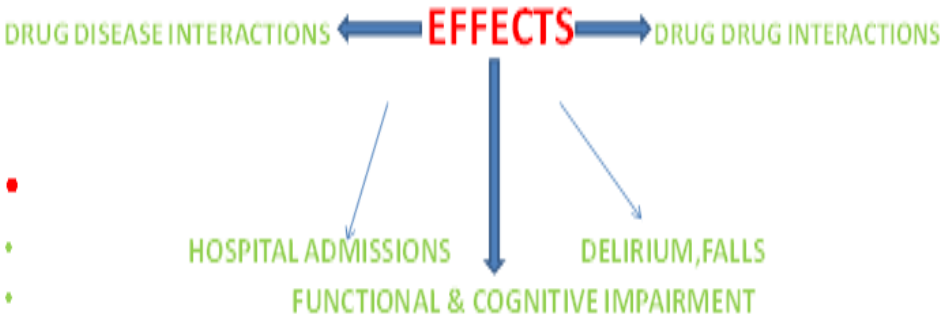
Monitoring the patient carefully is much essential in view of the paucity of clinical trial data in frail older patients .There are tools like Armor to evaluate polypharmacy in elderly patients [22]. ARMOR is a stepwise approach for assessment of a geriatric patient who is receiving nine or more medications; seen for initial assessment; seen for falls / behaviors; or admitted for rehabilitation. The clinician first observes heart rate, blood pressure (postural), and oxygen saturation rate at rest and with activity. A physician assessment and physical examination is followed by the following steps:

A = Assess the individual for total number of medications and for certain group of medications that have potential for adverse outcome e.g. Beta blockers, Antidepressants, Antipsychotics, pain medications, vitamins and supplements
R = Review for possible drug-drug interactions, drug-disease interactions.
M = Minimize nonessential medication; eliminate medications that clearly lack evidence for their usage. Eliminate medications whose risks outweigh benefits and that have high potential for negative impact on primary functions.
O = Optimize by addressing duplication, redundancy, adjust drugs according to the hepatic & renal functional status, adjust oral hypoglycemic to blood sugar target HbA1C
R = Reassess heart rate, blood pressure (postural), oxygen saturation at rest and activity.

V. Discussion

The use of multiple medications often termed polypharmacy is recognized as a potentially serious problem especially in the management of elderly patients. Polypharmacy can be negative or positive; the potential risks of polypharmacy are evident and need to be balanced with the benefits of use of multiple medications required to cure, slow the progression or reduce symptoms of disease. Several studies have shown the increased incidence of hospitalization due to falls as a result of functional disability, impaired cognition due to the usage of multiple medications. Several authors have reported an increase in the occurrence of adverse drug reactions when the number of medications is increased.

VI. Figures And Tables



VII. Conclusion

Polypharmacy is common and needed while treating elderly patients. Even though many studies proved the relationship between increased number of drugs and negative outcomes like adverse events, falls, hospitalizations, more studies are needed to find out the measures for reducing polypharmacy .Steps to reduce polypharmacy include better communication between the physician, nurse and pharmacist. Increasing the awareness of the physicians, treating elderly on the occurrence of adverse events may help to some extent. The elderly patients should also be made aware of the consequences of polypharmacy and convinced about revealing all the facts about the drugs they are already taking when they visit a physician. They should be discouraged to take unnecessary alternative medicines and over the counter (O.T.C) drugs. Even though polypharmacy is a double edged weapon,the right use of it with better understanding of the outcomes is always beneficial.

References

[1]. Gurwitz JH, Polypharmacy: a new paradigm for quality drug therapy in the elderly? , Arch Intern Med., 164(18), 2004, 1957-9.
[2]. Morgan TK1, Williamson M, Pirotta M, et al, A national census of medicines use: a 24-hour snapshot of Australians aged 50 years and older, Med J Aust. 196(1), 2012 Jan 16,50-3.
[3]. Montamat SC1, Cusack B, Overcoming problems with polypharmacy and drug misuse in the elderly.Clin Geriatr Med. 8(1),1992,143-58.
[4]. Kennerfalk A., Ruigomez A.,et al,Geriatric drug therapy and healthcare utilization in the United kingdom.Ann. Pharmacother. 36,2002, 797–803
[5]. Lisa Pervin, Phd RN ,Polypharmacy and Aging ; Is there cause for Concern? CRRN Gerontology Update ARN Network ,Feb/March 2008
[6]. Hilmer SN1, Gnjidic D, The effects of polypharmacy in older adults. Clin Pharmacol Ther. 85(1),2009,86-8.
[7]. Mallet L1, Spinewine A, Huang A, challenge of managing drug interactions in elderly people .Lancet.2007,370(9582):185-91.
[8]. Kristina Johnell 1,2 and Inga Klarin1,2,3,The Relationship between Number of Drugs and Potential Drug-Drug Interactions in the Elderly- A Study of Over 600 000 Elderly Patients from the Swedish Prescribed Drug Register
[9]. Gurwitz JH, Field TS, Harrold LR, et al, Incidence and preventability of adverse drug events among older persons in the ambulatory setting. JAMA,289,2003,1107–16.
[10]. Lindblad CI, Hanlon JT, Gross CR, et al, Clinically important drug- disease interactions and their prevalence in older adults.Clin Ther,28,2006,1133–43.
[11]. Akazawa M, Imai H, Igarashi A, Tsutani K,Potentially inappropriate medication use in elderly Japanese patients,Am J Geriatr Pharmacother. 8,2010,146–160.
[12]. Hovstadius B, Petersson G,The impact of increasing polypharmacy on prescribed drug expenditure-a register-based study in Sweden 2005-2009. Health Policy,109,2013,166–74.
[13]. Bourgeois FT, Shannon MW, Valim C, et al,Adverse drug events in the outpatient setting: an 11-year national analysis. Pharmacoepidemiol Drug Saf,19,2010,901–10.
[14]. Marcum ZA, Amuan ME, Hanlon JT, et al,Prevalence of unplanned hospitalizations caused by adverse drug reactions in older veterans,J Am Geriatric Soc,60,2012,34–41
[15]. J Nutr Health Aging,14(6),2010,477-82.
[16]. Joseph E Gaugler1*, Sue Duval2, Keith A Anderson3 and Robert L Kane4, Predicting nursing home admission in the U.S: a meta-analysis, BMC Geriatrics,2007.
[17]. Br J Clin Pharmacol.61(2),2006,218-23.
[18]. Tromp AM, Plujim SM, Smit JH, et al,Fall-risk screening test: a positive study of predictors for falls in community-dwelling elderly,J Clin Epidemiol.54,2001,837–844.
[19]. Leipzig RM1, Cumming RG, Tinetti ME, Drugs and falls in older people: a systematic review and meta-analysis I. Psychotropic drugs, J Am Geriatr Soc. 47(1),1999,30-9.
[20]. Hajjar ER, Cafiero AC, Hanlon JT,Polypharmacy in elderly patients. Am J Geriatr Pharmacother.5,2007,345–51.
[21]. Sarah N. Hilmera , Andrew J. McLachlanb,c , David G. Le Couteurb,Clinical pharmacology in the geriatric patient,Academia,2006
[22]. Raza Haque ,ARMOR : A tool evaluate polypharmacy un elderly persons ,MD Annauls of Long term care, June 2009.