WORK STUDY OF ANTIHYPERTENSIVE DRUGS

HANSRAJ BISHNOI[a1], SHAILESH SHARMA[b], OMVEER SINGH[c] AND SUNEHA RANI[d]

[abc]School of Pharmaceutical Studies Faculty of Health Sciences, Dr. K. N. Modi University Newai, Tonk, Rajasthan, India
[d]Department of Pharmacology, Mahatma Gandhi Collage of Pharmaceutical Sciences, Jaipur, Rajasthan, India

ABSTRACT

This study was designed to monitor factual clinical trends in the treatment of Hypertension and to evaluate the correlation between different therapy options and different outcome related to safety. Subjects were screened for selection criteria. Screening assessments included complete medical and smoking history, clinical examination, ECG and spirometer. After clinical examination, spirometric evaluation was done. Follow-up visits were scheduled every month till 16 weeks from baseline visit. Patient, who exceeds systolic BP 180, was instructed to immediately contact their physician for assessment and initiation of appropriate therapy. The importance of ADRs is often soft-pedaling. They are common, can be life intimidating and unnecessarily expensive. Because of the broad range of drugs available, the demonstration of toxicity can be variable and infect any organ system. By continuously drawing awareness to (the probability of) adverse reactions to drugs, physicians are also convince to include fancy ADRs in their differential diagnoses at an early stage, thus expediting an appropriate response, which frequently implies that the treatment is discontinued. In this way unnecessary and expensive diagnostic tests can be avoided and the time patients spend in the hospital could be shorter. The physicians' and pharmacists' awareness of adverse events is raised.

KEY WORDS: Hypertension, Therapy, Evaluates, Patient

The definition of Pharmacovigilance is the science and project relating to the observation, assessment, appreciation and prevention of adverse reaction, particularly long term and short term reaction of medicines. Generally talk, pharmacovigilance is the science of gather, monitoring, researching, judge and evaluating data from healthcare supplier and patients on the adverse effect of medications, biological outcome, herbalism and conventional medicines with a view to recognize new information about ADRs associated with drugs and preventing ADRs to patients. ADRs are one of the major causes of Hospital Admission in almost every country and it increases the cost of hospitalization and low down the quality to life of the social being.

Therefore it is very necessary to find out safety of drugs like anti-hypertensive, anti-diabetics anti-TB etc which are frequently used in Indian population. The present dissertation emphasized on the ADR monitoring with anti-hypertensive drugs. (1)

Blood pressure is directly related with risks of several types of cardiovascular illness, and the association of BP with disease risk are continual, indicating that big proportions of most people's have non-optimal BP values. B.P. increase is directly superintend for 57% of all stroke expiry and 24% of all coronary heart disease expiry in India.(2) This actuality is important because blood presser increase is a controllable disease and a 2 mmHg people-wide decrease in BP can block 151,000 stroke and 153,000 coronary heart disease expiry in India.(2)

The toxicological studies of drug are performed only with limited number of patients as compared with the patient strength the study drug got after Marketing Authorization.

Any development in drug security or understanding will eventually lead to development in patient care and thus the benefits of effectual pharmacovigilance should be appreciated and pursued by all healthcare professionals. Effective spontaneous reporting of suspected ADRs also relies on good communication between healthcare professionals and patients, which in turn should assist good relationship and can improve patient care. Rare ADRs are not included in clinical trials, study of Drug interaction is with limited number of drugs patients are on continuous monitoring, this all are the bias to clinical trial which lead to the need of Pharmacovigilance.

EPIDEMIOLOGY

In the year 2000 it is estimated that nearly one billion people or —26% of the adult population have hypertension worldwide. (6) It was common in both grow (333 million) and immature (639 million) countries. (6) However rates vary noticeably in dissimilar regions with rates as decrease as 3.4% (men) and 6.8% (women) in rural

[1]**Corresponding author**

India and as increase as 68.9% (men) and 72.5% (women) in Poland. [7]

In 1995 it is approximate that 43 million human in the United States had blood presser or were perforce antihypertensive medication, almost 24% of the adult human being. [8] The generality of blood presser in the United States is rise 1 and reached 29% in 2004.[9][10] Blood presser more stop in men (though menopause tends reduce this difference) and those of decrease socioeconomic status. [3] Over 90-95% of adult blood presser is essential hypertension[3] The most common patients of secondary blood presser is primary aldosteronism[4] The occurrence of exercise hypertension is describeto range from 1-10%.[5]

MATERIALS AND METHODS

Rational of the Study

Hypertension is progressively irreversible disease. All available pharmacological options are used to improve the quality of life. However none of them is solely reduce the cardiac risk and long term therapy is required which is rather associated with side effects (including increase in cardiac morbidity and mortality), which further affects the quality of life adversely. The benefit and limitation of all pharmacological agents is already documented extensively. Mostly these are used in different combinations and there is major dependence on these drugs while proper follow-up and selection of best combination in optimum dosage and usage becomes secondary. The proper use and adherence to medication is of paramount importance to ensure better outcome.

Guideline from authorities (GOLD, ACP, ICS etc) warrants the meticulous monitoring and follow-up for effective management of Hypertension i.e.

1. Which group of medicine is more effective and is safer.
2. Which are the most common side effects against reported (labeled) and with which group.
3. If any unlabelled side effect observed.
4. Which inhalation devices are more useful and patient friendly.
5. What are the factors responsible for negative outcome?

Male and Female subjects with a diagnosis of Hypertension between 18 and 90 years of age.

Inclusion Criteria:	Subjects given written informed consent. Subjects of either sex between 18 and 90 years of age. Confirmed diagnosis of Hypertension , Systolic BP > 140 mm Hg Subjects with documented history of Hypertension for at least the past 6 months, who were on stable Antihypertensive for at least 4 weeks. In the opinion of the treating physician, able to comply with the requirements of the protocol.
Endpoints :	**Primary Safety parameter** Incidence of adverse events Incidence of drug-related adverse events Incidence of severe cardiac exacerbations, requiring emergency attendance, oral steroids or hospitalization or Antibiotics due to increase in BP. Secondary Safety Parameter *record the compliance to uses of Antihypertensive agents. *To monitor change in vitals with treatment
Sample Size	**114**
Permitted Medications :	Antibiotics Medication to treat one co-morbidity Following were the drug groups:—

Table 1: Groups and Medicine list

GROUPS	MEDICATION			
A	AMLODIPINE	-	-	-
B	AMLODIPINE	ATENOLOL	-	-
C	AMLODIPINE	LOSARTAN		
D	AMLODIPINE	LOSARTAN	HTZ	
E	AMLODIPINE	LOSARTAN	HTZ	ATENOLOL
F	AMLODIPINE	RAMIPRIL	HTZ	ATENOLOL
G	LOSARTAN			
H	LOSARTAN	HTZ		
I	LOSARTAN	ATENOLOL		
J	LOSARTAN	SP 'LACTONE		
K	METOPROLOL			
L	METOPROLOL	RAMIPRIL		
M	RAMIPRIL			
N	FRUSEMIDE	SP 'LACTONE		
O	DILTIAZEM	FRUSEMIDE	SP 'LACTONE	
Prohibited Medications	Oral / injected corticosteroids Leukotriene Antagonist Note: Oral corticosteroids will be permitted in case of a single episode of exacerbation.			

RESULTS

Result of Primary Objective

The study was conducted on 116 patients enrolled at NIMS Super specialty Hospital Sobha Nagar Jaipur (Rajasthan).

- Out of which 2 dropped. Among the patients,
- 40 were females and 74 were males.
- More of the females were there in age group 36-42 and 50-56,
- However, in higher age group males were more; maximum (20) patients were in age group of 64-70 years.

Table 2: Demographic distribution of study population

S.No	Age Group	Sex		Total
		Male	Female	
1	21-28	0	4	4
2	29-35	6	2	8
3	36-42	6	10	16
	43-49	10	4	14
5	50-56	16	10	26
6	57-63	10	0	10
7	64-70	20	8	28
8	71-77	6	2	8
	Grand Total		40	114

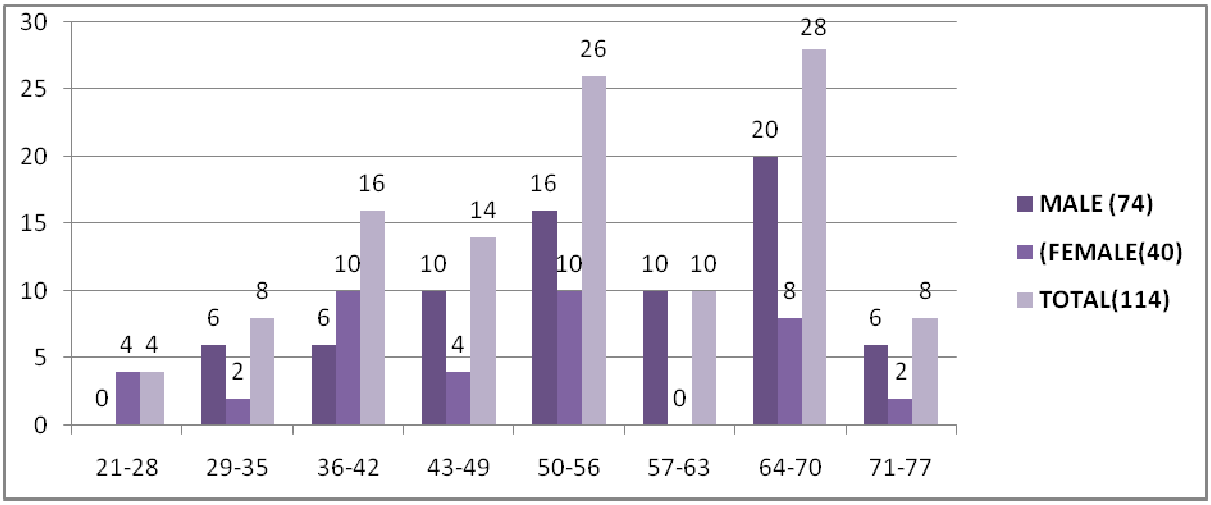

Figure 1: Demographic distribution of study population

- Total fifteen study groups are made, out of which 4 groups have single drug, 7 groups with two drugs, 2 groups with 3 drugs, 2 groups with four drugs.
- Group A has highest number of patients i.e. 38.
- Group A has highest number and male and female patients enrolled.

Table 3: Occurrence of ADR (Group Wise)

	Side-Effect		
MEDICINE GROUP	**No.**	**Yes**	**Grand Total**
A	12	26	38
B	10	2	12
C	6	2	8
D	6	2	8
E	0	2	2
F	0	2	2
G	6	2	8
H	2	10	12
I	2	0	2
J	2	0	2
K	6	4	10
L	2	0	2
M	2	0	2
N	0	4	4
O	2	0	2
Grand Total	48	66	114

- Highest no. of patients experienced ADRs was observed in group A with patient strength 26 following by group 10.
- Lowest no. patients experienced ADRs was observed in groups B, C, D, E, F with patient strength 2.
- No ADR was observed in group I, J, L, M, O

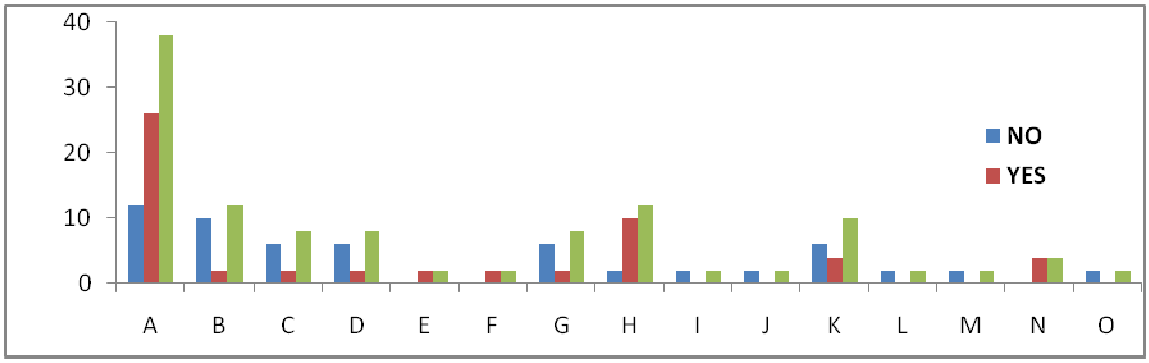

Figure 2: Graphical representation of occurrence of ADR (Group Wise)

Table 4: Gender v/s Side effects

	Side Effects		
Sex	No.	Yes	Total
F	14	26	40
M	30	44	74
Grand Total	44	70	114

Females were found to experience more side effects 26 (65%) as compared to males 44 (59.5%), where total population experienced side effects was 70 (61.4%).

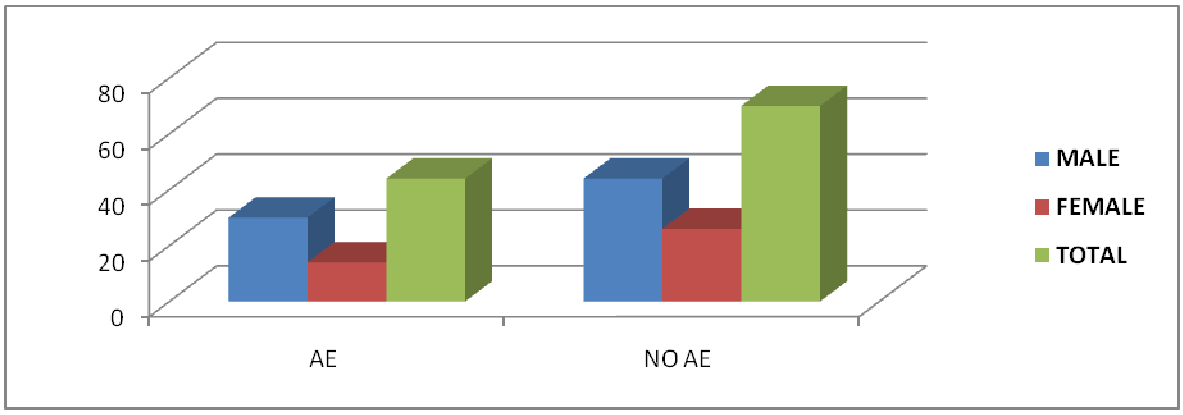

Figure 3: Graphical representation of Gender v/s Adverse Events

CONCLUSION

In this finish chapter we move our attention from the more particular aspects of pharmacovigilance to the large, contextual picture with specific emphasis on future evolution and the responsibility of the pharmacist in all this.

Raising the recognition of ADRs also is an urgent instrument to assist rational and all right prescription practices. Again, pharmacovigilance can assist to prevent detrimental body effects and control people health expenditure. Given that only a restricted number of new drugs is liberate every year and that today there is every basis to be conscious and inexpensive when prescribing drugs. Apart from the drug's reaction, the profile of its adverse effects can be an important reflection for doctors in their choice of drug treatment.

On the other hand, the oral liquid measuring devices plays an important role for the efficacy of the

treatment, Hence following conclusions are drown from the study:

- Best option is oral medicine should be marketed in unit dosage form but, it increases the cost or proper calibrated measuring devices should be provided with each oral liquid dosage form.
- Proper instruction should be provided by pharmacist for measuring the oral liquid, also the demerits of wrong measuring devices should be discussed with the patients.

REFERENCES

Chockalingam A (May 2007). "Impact of World Hypertension Day". The Canadian Journal of Cardiology 23 (7): 517-9. PMID 17534457.

R Gupta. Trends in hypertension epidemiologyin India Journal of Human Hypertension (2004) 18, 73-78

Carretero OA, Oparil S (January 2000). "Essential hypertension. Part I: definition and etiology". Circulation 101 (3): 329-35. PMID 10645931.

Jette M, Landry F, Bliimchen G (April 1987). "Exercise hypertension in healthy normotensive subjects. Implications, evaluation and interpretation". Herz 12 (2): 110-8. PMID 3583204.

Klaus D (April 1987). "[Differential therapy of exercise hypertension]" (in German). Herz 12 (2): 146-55. PMID 3583208. 4

Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J (2005). "Global burden of hypertension: analysis of worldwide data" Lancet 365 (9455): 217-23. doi:10.1016/S0140-6736(05)17741-1. PMID 15652604.

Kearney PM, Whelton M, Reynolds K, Whelton PK, He J (January 2004). "Worldwide prevalence of hypertension: a systematic review". J. Hypertens. 22 (1): 11-9. PMID 15106785.

Burt VL, Whelton P, Roccella EJ, et al. (March 1995). "Prevalence of hypertension in the US adult population. Results from the Third National Health and Nutrition Examination Survey, 1988-1991". Hypertension 25 (3): 305-13. PMID 7875754. Retrieved 2009-06-05.

Burt VL, Cutler JA, Higgins M, et al. (July 1995). "Trends in the prevalence, awareness, treatment, and control of hypertension in the adult US population. Data from the health examination surveys, 1960 to 1991". Hypertension 26 (1): 60-9. PMID 7607734. Retrieved 2009-06-05.

Ostchega Y, Dillon CF, Hughes JP, Carroll M, Yoon S (July 2007). "Trends in hypertension prevalence, awareness, treatment, and control in older U.S. adults: data from the National Health and Nutrition Examination Survey 1988 to 2004". Journal of the American Geriatrics Society 55 (7): 1056-65. doi:10.1111/j.1532- 5415.2007.01215.x. PMID 17608879.