Journal of Applied Pharmaceutical Science 01 (03); 2011: 128-131

Journal of Applied Pharmaceutical Science

Available online at www.japsonline.com

Received: 25-04-2011
Revised on: 28-04-2011
Accepted: 03-05-2011

Studies on the prescriptions of cardio vascular units

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ABSTRACT

Cardiovascular diseases (CVDs) are the major contributors to the global burden of chronic diseases. In India CVD is projected to be the largest cause of death and disability by 2020. Hypertension is the commonest CVD affecting at least 20% of adult population. It is one of the major chronic diseases resulting in high mortality and morbidity in today's world. The prevalence of CVD in the state of Kerala was found in the cross section of the society by the research group in an earlier study on prevalence of hypertension. A plethora of new drugs are now available and the quality of life for these patients has considerably improved. In the present investigation, the prescribing attitude of various physicians was reviewed carefully. The available medical records and the prescriptions of the Cardiology unit were reviewed to study the prescribing pattern and drug therapy for CVD. The various aspects studied were; the diagnosis and preliminary investigations conducted for the patients, Mean Systolic Blood Pressure (SBP), Mean Diastolic Blood Pressure (DBP), the investigation reports of lipid profiles, Mean Total Cholesterol and Mean HDL Cholesterol levels, advises made with regard to other investigations like ECG, TMT, Echo etc and type of drugs prescribed including cases of combination therapy in first visit and subsequent revisits. Prevalence of diabetes was also studied in CVD patients. The prescribing pattern for hypertension reveals that single drug therapy was mostly preferred. The most commonly preferred and prescribed drugs (MCPP) were Amlodipine, Atenolol, and Losartan Potassium etc. However combination therapy (CT) was also observed. The most commonly preferred and prescribed combinations were Atenolol+Amlodipine, Enalapril+Hydrochlorothiazide, Frusemide+Spironolactone. The various classes of drugs include ACE inhibitors, Beta-Blockers, Nitrates, and Diuretics etc. Aspirin was prescribed for 40 to 50% of patients. Despite the proven benefits of Aspirin therapy in the primary and secondary prevention of CVD, the prescribing pattern still remains little suboptimal. The Biochemical investigation reports of the lipid profile reveal that a considerable number of patients were found to have dislipidemia. Statins and Fibrates were mostly prescribed for lowering low density Lipoprotein Cholesterol (LDL-C) and improving High density Lipoprotein Cholesterol (HDL-C) levels. The study reveals that there is a considerable extent of CVD risk factors in the studied cross section of the community.

Key words: Cardiovascular diseases, Anti hypertensive drugs, Mean Systolic Blood Pressure, Diastolic Blood Pressure, Dislipidemia

INTRODUCTION

Cardiovascular diseases (CVDs) are the major contributors to the global burden of chronic diseases. In India CVDs is projected to be the largest cause of death and disability by 2020 with 2.6 million Indians predicted to die due to coronary heart diseases, which constitutes 54.1% of all CVD deaths. Nearly half of these deaths are likely to occur among young and middle –aged individuals (30-79years).This is because Indians experience CVD deaths at least a decade before their counterparts in the developed countries (WHO 2002 &Prabhakaran2005). Hypertension is one of the major chronic diseases and the commonest Cardiovascular disorder resulting in high mortality and morbidity in today's world (Tiwari H, Kumar A2004). The preventive measures

recommended for coronary heart diseases focuses on lowering low-density lipoprotein cholesterol (LDL-C) as the primary target of lipid modifying therapy. Hence the studies on Antihypertensive and lipid lowering treatment to prevent heart attack trial (ALLHAT) is receiving due attention of frontline clinical researchers (Xie etal 2005).

In the present investigation, the prescribing attitude of various physicians was reviewed carefully. The available medical records and the prescriptions of the Cardiology unit were reviewed to study the prescribing pattern and drug therapy for CVD.

METHODOLOGY

In view of the above and in context of the reality that a plethora of new drugs are now available for the physician's to improve the quality of life of their patients, an attempt has been made to investigate the prescribing pattern of antihypertensive drugs to identify whether such pattern of prescription is appropriate and in accordance with the international guidelines for pharmacotherapy of hypertension (Jassim etal2001). In the preliminary studies, Anti hypertensive are found to be widely prescribed by family physicians, General Practitioners and medicine specialists besides cardiology experts (Sequeira etal 2002).

In the present studies, the investigational studies were aimed at the prescribing pattern and mode of therapy adopted in cardiology units. The available medical records and the prescriptions of cardiology unit were carefully reviewed.

The aspect of the study includes:

- Diagnosis and preliminary investigations conducted
- Mean Systolic Blood Pressure (SBP)
- Mean Diastolic Blood Pressure (DBP)
- Biochemical investigations on Lipid profile
- Mean Total Cholesterol
- Mean HDL Cholesterol
- Other investigations like ECG, TMT, Echo etc
- Nature of drugs prescribed
- Prevalence of Diabetes
- Utilization of Aspirin(Randall etal 2005)
- Lipid lowering treatment adopted and others.

RESULTS AND DISCUSSION

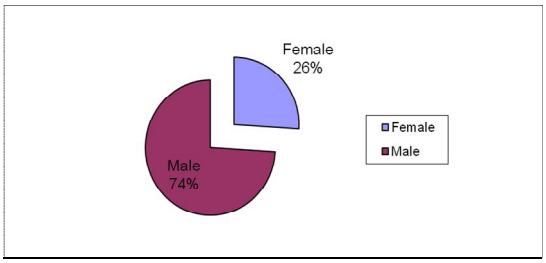
Studies on the occurrence of CVD in different age group and sex reveals that in the sample population of 228 patients, a total of 168 were males and 60 were female. The table-1 below reveals that 5.7 % of male and 0.43 % of females are in the age group of 30 to 39, 14 % and 3.5 % of male & female respectively are in the age group of 40 to 49, 21.9 % and 8.7 % of male & female respectively are in the age group of 50 to 59, 18.4 % and 3.5 % of male & female respectively are in the age group of 60 to 69. The results are also shown in figure 1& 2.

Studies on the associated diseases reveals that both male and female are susceptible to various associated diseases like Coronary artery diseases (CAD), Dislipidemia (DL), Angina, hypertension (HTN), Diabetes mellitus (DM), Ischemic heart diseases (IHD).Table-2 reveals that 127 males and 46 females are having DL, similarly 74 males & 12 females are having angina, 34 males & 8 females are having HTN+DM, 4 males & 1 female having IHD (Baskota & Rao 2006).

Table –1: Age & Sex Wise Distribution of the Subjects

Age Group (years)	Sex	
	Male (%)	Female (%)
30-39	13 (5.7 %)	1 (0.43 %)
40-49	32 (14 %)	8 (3.5 %)
50-59	50 (21.9 %)	20 (8.7 %)
60-69	36 (15.7 %)	18 (7.8 %)
70-79	42 (18.4 %)	8 (3.5 %)

Figure-1 Sex wise distribution of Subjects



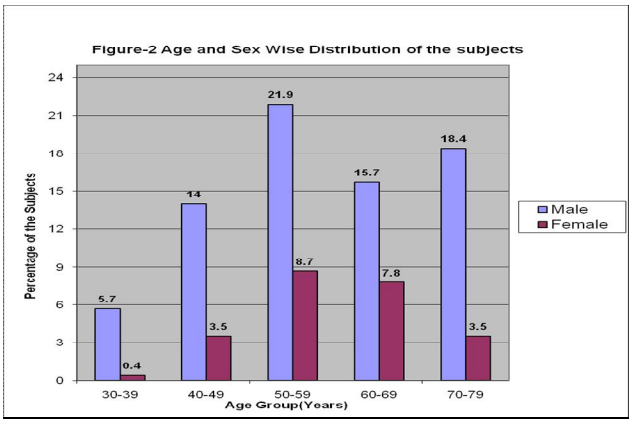


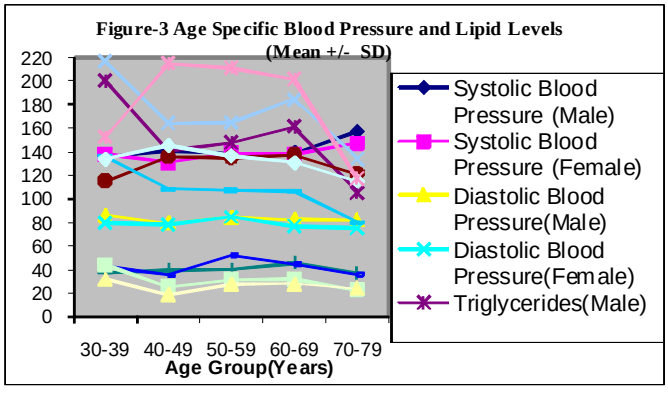
Table –2 Distribution of Associated Diseases According Sex of Patients

ASSOCIATED DISEASES	MALE	FEMALE
Coronary artery diseases(CAD)	124	31
Dislipidemia(DL)	127	46
Angina	74	12
Hypertension(HTN)	70	30
Diabetes mellitus(DM)	63	20
DM+HTN	34	8
Ischemic heart diseases(IHD)	4	1
Others	2	1

Table 3 Age specific blood pressure and Lipid levels (Mean± SD)

Variable	30-39 Years		40-49 Years		50-59 Years		60-69 Years		70-79 Years	
Systolic Blood Pressure (SBP) (mmHg)	Male 135.6± 31.6	Female 138± 21.6	Male 140.7± 21.8	emale 131± 21	Male 138.9± 22.8	Female 138.8± 26.2	Male 139.1± 24.4	Female 138.1± 26.4	Male 157.4± 30.2	Female 147.3± 28.8
Diastolic Blood Pressure (DBP) (mmHg)	86.4± 18.8	80± 8.1	79.7± 8.9	78.3± 11.4	85.1± 9.6	85.1± 11.6	82.8± 9.8	77.1± 15.6	82.3± 25.2	75.2± 8.1
Triglycerides(TG) (mg/dl)	200.4± 94.5	115.5± 38.5	140.6± 64.1	135.8± 44	147.8± 108.7	135.2± 45.8	161.2± 105.4	137.5± 55.8	105.5± 12.2	121.5± 52.5
High Density Lipoprotein (HDL) (mg/dl)	37.8± 7.2	42.8±4	39.5± 10	35.5± 6.9	40.4± 21.6	52.1± 27.3	45.6± 11.4	44.6± 10.8	37.4± 9.6	36± 12.1
Low Density Lipoprotein (LDL) (mg/dl)	136.2± 19.6	134 23.2	108.5± 37.4	145.5± 46.3	107.1± 42.5	136.9± 49.2	106.5± 50.7	130.9± 49.9	80.4± 25.9	115± 44.8
Very Low Density Lipoprotein (VLDL) (mg/dl)	44.2± 19.2	32± 19.5	26± 11.9	19± 9.5	31.2± 22.8	27.5± 8.8	31.9± 20.3	27.9± 7.7	22.9± 10.9	24.3± 24.9
Total Cholesterol (TC) (mg/dl)	217± 19.7	153± 72.3	163.8± 48.2	215± 25.2	164.8± 33.1	211.3± 62.3	184.6± 71.9	201.2± 50.1	133.9± 13.4	117.5± 45.3

Studies on the Age Specific blood pressure & mean lipid levels reveals that Mean systolic blood pressure(SBP) was 140.5 mm Hg(142.3 mmHg in men,138.6 mm Hg in women) and mean diastolic blood pressure(DBP) was 81.2 mm Hg (83.3 mm Hg in men, 79.1 mm Hg in women).Both mean SBP and mean DBP increased with age in the age group of 50 to 59,60 to 69 and 70 to 79. But fluctuations in mean SBP and mean DBP were found in the age group of 30 to 39 and 40 to 49. Mean TG and mean HDL, were 127.5md/dl (125.9 mg/dl in men, 129.1 mg/dl in women) and 41.2 mg/dl (40.2 mg/dl in men, 42.2 mg/dl in women) respectively. Mean TC and mean LDL were 176.2mg/dl (172.8 mg/dl in men, 179.6 mg /dl in women) and 120.1 mg/dl (107.7 mg/dl in men, 132.5 mg/dl in women).Mean HDL Cholesterol increased with age, whereas mean TG and mean TC increased with age in the age group of 40 to 49, 50 to 59, 60 to 69. But mean LDL had no linear relationship with age and the data's are shown in Table-3& figure-3 (Reddy & Prabhu 2005).



Studies on prescribing pattern reveals that in the cardiovascular units Beta blockers (50.9 %) were the most commonly prescribed, followed by Nitrates (43%) Calcium Channel Blockers (15.8%). Amlodipine, Diltiazem, Ramipril, Losatan Potassium, Metaprolol, Atenolol & Nebivolol were the leading drugs in their respective groups. However combination therapies were also observed. The MCPP combinations were Atenolol+Amlodipine, Losartan Potassium + Hydro chlorothiazide, Enalapril + Hydrochlorothiazide. Moreover Atorvastatin (34.6%) and Simvastatin (19.3%) were prescribed for modifying the lipid level .The prescribing pattern also reveals the usuage of some anti thrombotic drugs .The MCPP single antithrombotic(AT) drugs were Aspirin and Clopidigrel. However CT was also observed. The MCPP combination was Clopidogrel+Aspirin is shown in Table-4. Pattern of prescribing drugs in cardiovascular units is shown in figure-4(Baskota & Rao 2006).

Table-4 : MCPP Drugs

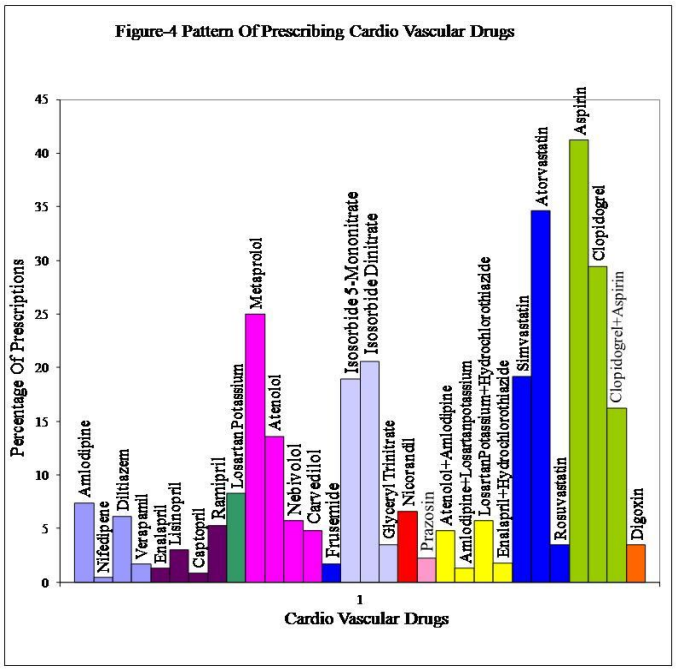
Class	Drug	No. of prescriptions containing	%
	Amlodipine	17	7.4 %
CCB	Nifedipine	1	0.44 %
	Diltiazem	14	6.14 %
	Verapamil	4	1.7 %
	Enalapril	3	1.3 %
ACE- Inhibitors	Lisinopril	7	3.0 %
	Captopril	2	0.87 %
	Ramipril	12	5.3 %
Angiotensin Antagonist	Losartan Potassium	19	8.3 %
	Metaprolol	57	25 %
	Atenolol	31	13.6 %
BB	Nebivolol	13	5.7 %
	Carvedilol	11	4.8 %
Diuretics	Frusemide	4	1.7 %

NT	Isosorbide 5-Mononitrate	43	18.9 %
	Isosorbide Dinitrate	47	20.6 %
	Glyceryl trinitrate	8	3.5 %
PCO	Nicorandil	15	6.6 %
	Digoxine	8	2.2 %
Miscellaneous Drugs	Prazosin	5	3.5 %
	Atenolol + Amlodipine	11	4.8 %
	Amlodipine + Losartan Potassium	3	1.3 %
CT	Losartan Potassium + Hydrochlorothiazide	13	5.7 %
	Enalapril + Hydrochlorothiazide	4	1.8 %
	Frusemide+Spironolactone	9	3.9 %
	Atorvastatin	79	34.6 %
LLA	Simvastatin	44	19.2 %
	Rosuvastatin	8	3.5 %
	Aspirin	94	41.2 %
AT	Clopidogrel	67	29.4 %
	Clopidogrel + Aspirin	37	16.2 %

CONCLUSION

The study of the prescription and the available MRD records reveals that a systemic therapy is in place. Systematic preliminary investigations and patient factors vis-à-vis hypertension factors including family history, age, sex, stress factors were also analyzed by the physicians in the hospital and there is a right diagnosis made. However, the other preliminary investigational aspects like BMI, WC etc also need to be properly recorded in the prescriptions/ medical records. During first visit single drug therapy was prescribed and during subsequent visit combination therapy was suggested.

Biochemical investigation reports included in the patient MRD records and the biochemical investigation reports reveal that a majority of the patients are having dislipidemia and other investigations like ECG, TMT, Echo were mostly advised for the specific patients. The prescription patterns for lipid lowering treatment were generally by statins and the use of Aspirin still appears to be suboptimal.



ACKNOWLEDGEMENT

Author greatly acknowledges Amrita Viswa Vidya Peetham, Principal and Faculty members of Amrita School of Pharmacy, Kochi for their constant support and encouragement.

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