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A STUDY OF CLINICAL PROFILE OF METABOLIC SYNDROME IN HYPERTENSIVE PATIENTS AT TERTIARY CARE CENTRE, KARWAR

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Abstract

Background: The prevalence of metabolic syndrome (MS), a pathophysiological and asymptomatic state of numerous complications has been documented in various recent studies worldwide. Inadequate data are available highlighting the magnitude of MS in country like India whose major health problem has been infectious disease rather than non-communicable disease like hypertension. The aim of the present study was to determine the prevalence of MS in essential hypertensive patients using the IDF criteria. **Methodology**: The present cross-sectional study was conducted on 50 hypertensive subjects of more than 18 years of age in tertiary care hospital, Karwar between October 2020 to march 2021. 50 hypertensive subjects were evaluated according to International Diabetes Federation Criteria(IDF) for MS with waist circumference for South Asians ethnic group and prevalence of MS in these hypertensive subjects were observed. **Results**: Total 50 hypertensive subjects out of which 31 were female and 19 were male. 46 patients diagnosed as MS. 49 patients were Diabetic & on treatment. 34% were overweight as per WHO classification of BMI and maximum subjects 52% were obese as per Asian classification of BMI. Out of 31 females 17 and out of 19 males 6 were having MS. **Conclusion:** High prevalence of MS among hypertensive patients establishes MS has emerged as a significant health concern and indicates the need for metabolic screening and preventive measure in all hypertensive patients at the first diagnosis.

Key words: Hypertension, BMI, Prevalence, diabetes.

Introduction

An elevated arterial pressure is an important public health problem in developed countries, as well as in India.[1,2] Hypertension is the most common modifiable risk factor for coronary artery disease, stroke, congestive heart failure, end-stage renal disease, and peripheral

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vascular disease. Metabolic syndrome (MS) is the "fertile soil," and is strongly predictive of developing diabetes mellitus and cardiovascular diseases and subsequent mortality in future. [3] According to IDF criteria central obesity (defined as waist circumference with ethnicity specific values) Increased waist circumference (males: ≥90 cm and for females: ≥80 cm)(South Indian Ethnicity) plus any two of the following four factors is essential to be present, to label MS i.e.,

1. Hypertriglyceridemia ≥150 mg/dl (1.7 mmol/l),
2. Low HDL(males <40 mg/dl) & for females <50 mg/dl.
3.Elevated Blood pressure >10/85 mmhg or on drug treatment for hypertension.
4.Elevated blood sugar (FBS>100 mg/dl) or on drug treatment for diabetes mellitus.

The key factors associated with rapid socioeconomic transitions and nutritional and lifestyle changes are as a result of increasing mechanization, urbanization, affluence, and rural-to-urban migration.[4,5] Hypertension is an independent as well as one of the components of MS is the most common modifiable risk factor for CAD, CHF, peripheral vascular disease, end-stage renal disease, and stroke. An elevated arterial pressure (Hypertension) is an imperative public health concern in developed countries, as well as in India.[6,7]

Materials and Methods

The present cross-sectional study was conducted on 50 hypertensive subjects of more than 18 years of age in tertiary care hospital, Karwar between October 2020 to march 2021. 50 hypertensive subjects were evaluated according to International Diabetes Federation Criteria (IDF).

Exclusion criteria:

1. <18 years of age
2. Preganant patients
3. Patients on steroid medication
4. Refusal to give informed consent.

According to WHO STEPS manual Anthropometric data (waist circumference, height and weight) were collected. Blood pressure was measured using a standard adult arm cuff of sphygmomanometer after 10 min rest. From each patient, venous blood was collected and serum was extracted and sent for investigations. Subjects were categorized as MS according to IDF criteria with waist circumference for South Asian ethnicity. Tis study has been approved by institutional ethics committee, KRIMS, Karwar.

Statistical Analysis: Data were presented in the form of statistical Tables and charts. SPSS software version 20 was used for statistical analysis & p value of <0.05 was considered significant.

Results

In this study 50 hypertensive patients included.Among them 19 were males & 31 females, which constitutes 38% & 62% respectively (Table 1).In this study maximum number of participants from age group of 51- 55years(44%) ,followed by 31-50 age group (38%) and 66-80 years age group (18%) (Table 2).

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Table 1: Gender wise distribution of subjects.

S.no	Gender	Frequency	%
1	Male	19	38
2	Female	31	62

Table 2: Agewise distribution of subjects.

S.No	Age group	Frequency	%
1	35-50	19	38
2	51-65	22	44
3	66-80	9	18

Table 3: BMI wise distribution(WHO).

S.no	Category	frequency	%
1	Normal	14	28
2	Overweight	17	34
3	Obese	19	38

Table 4: BMI wise distribution (Asian)

S.no	Category	frequency	%
1	Normal	7	14
2	Overweight	17	34
3	Obese	26	52

Maximum subjects were obese (38%) as per who classification of BMI & 34% were overweight (Table 3). But according to Asian classification of BMI 52% were obese & 34% were overweight in our study (Table 4).

Table 5: IDF components of metabolic syndromes

S.No	Variable	frequency	%
1	Abdominal obesity	26	52
2	Elevated Blood pressure	100	100
3	TG	19	38
4	HDL	15	30
5	FBS	28	56

Maximum subjects were diabetics (56%) apart from hypertension.Abdominal obesity seen in 52% subjects ,hypertriglyceredimia seen in 38% & hdl abnormality in30% individuals in this study (Table 5).

Table 6. Metabolic syndrome as per IDF criteria.

S.nO	Metabolic Syndrome	fequency	%
1	Yes	23	46
2	No	27	54

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Out of 50 hypertensive subjects 46 % were diagnosed as Metabolic syndrome, 35 were on treatment for hypertension and 15 were newly diagnosed . Out of 50 subjects 56% were diabetic ,21 are on treatment for diabetes & 7 were newly detected. Dyslipidimia seen in 35-40% of subjects (Table 6).

Among components of IDF criteria to define metabolic syndrome there was no significant difference ($p>0.05$) for all component except abdominal girth ($p<0.05$) among male & females.

Table 7: Anthropometric variables.

S.No	Variables	MS present	MS absent
1	Age	56.74+7.04	52.22+10.73
2	Weight (kg)	81.22+9.3	67.11+10.3
3	Height (mt)	1.62+0.08	1.62+0.6
4	BMI (kg/m2)	30.3+2.2	26.3+3.5
5	WC (cm)	88.40+5.5	80.2+6.9
6	SBP(mmhg)	143.36+13.05	142.7+10.7
7	DBP (mmhg)	88.62+6.2	90.03+5.23

*MS- Metabolic syndrome

There was significant difference in mean value of age, weight, BMI and waist circumference for presence and absence of metabolic syndrome ($p<0.05$).

There was no significant variation in gender distribution for presence of metabolic syndrome ($p>0.05$). There was significant difference in mean value of weight, height, BMI and waist circumference for male and female ($p<0.05$).There was significant variation in mean sugar level and lipid profile with presence or absence of metabolic syndrome ($p>0.05$) .There was significant variation in mean sugar level and lipid profile with presence or absence of metabolic syndrome ($p<0.05$) except for s.HDL ($P >0.05$) (Table 7).

Discussion:

Present study was carried out among 50 hypertensive subjects in a tertiary care hospital to find out prevalence of Metabolic syndrome in these patients as per IDF criteria. In our study, 46% of patients had MS according to IDF criteria. Prevalence was more among female compared to malein our study. Findings of our study revealed the impact of diet, lifestyle, improvement in socioeconomic status, and urbanization of community which are modifiable risk factor for occurrence of MS.

Being cross sectional observational nature of study we didn't observe the effect of modification in modifiable risk factors and reduction in any component or overall reduction in metabolic syndrome. Older age was an independent risk factor associated with MS which is consistent with 8,9,10,11(references) other studies. 36 out of 50 of the subjects in our study had an increased BMI (≥25 kg/m2). It is also noteworthy that the MS group showed a significantly higher BMI and WC as compared to the hypertensive subjects without MS suggestive with $p<0.05$. Study by [12] Salagre *et al.* found similar results.

Findings of the study proved increased abdominal obesity leads to MS. In present study most common co- morbidity amongst the MS group was diabetes mellitus (56 %). Reduced HDL was the least common lipid abnormality recorded among the hypertensive patients (30 %),

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followed by increased triglycerides (38%), increased total cholesterol (41%), increased low-density lipoprotein (LDL; 85%). These results are somehow similar with the different studies from India and other parts 8,9,10,14, 15,16,17(references) of the world.

Mean blood pressure in patients with MS has 8,14,18 (references) been documented to be higher; however, it was not always the case. Poor control of blood pressure has been established in hypertensive patients with the components of MS present.[18] In our study mean blood pressure among MS was higher than non-MS but it was not statistically significant.

Conclusion

High prevalence of Metabolic syndrome among hypertensive patients establishes MS has emerged as a significant health concern and indicates the need for metabolic screening and preventive measure in all hypertensive patients at the first diagnosis. The synergistic effect of hypertension and other components of MS calls for the need for screening for the MS in hypertensive patients at initial diagnosis. India has become the diabetes capital of the world and the rising risk of diabetes due to MS prompts the need for aggressive measures to curtail the occurrence of associated metabolic disturbances.

Conflict of interest:Nil

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