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PREVALENCE OF METABOLIC SYNDROME – COMPARING REVISED NCEP ATP III VERSUS IDF CRITERIA IN MEDICAL COMMUNITY

Cardiology

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ABSTRACT

OBJECTIVES–Metabolic syndrome(MetS), important proctor of cardiovascular outcomes can be assessed by Revised NCEP ATP III and IDF criteria. We aimed to concordance between both of the criteria.

METHODS –It was a cross sectional study with 390 participants. Detailed physical and laboratory examination were done with multiple questionnaires. Prevalence of MetS was compared with Revised NCEP ATP III and IDF criteria.

RESULTS- MetS was diagnosed in 51.54% and 47.95% according to revised NCEP ATP III and IDF criteria respectively. Among those diagnosed with MetS by modified NCEP, 6.5% were missed by the IDF criteria. Participants diagnosed by the modified NCEP criteria had lower waist circumference but had higher cardiometabolic risks than those diagnosed with both criteria.

CONCLUSION- Prevalence of MetS is very high in medical professionals and the modified NCEP ATP III criteria may be more suitable in diagnosis of metabolic syndrome for this Indian cohort.

KEYWORDS

Introduction

Metabolic syndrome, a clustering of metabolic abnormalities, has been found to convey a significant risk for future atherothrombotic cardiovascular events. Metabolic syndrome includes high blood pressure, elevated triglycerides, low high-density lipoprotein (HDL), impaired fasting glucose, and excess abdominal fat. Metabolic syndrome was first described in the 1920s by Kylin, a Swedish physician. The term "Metabolic Syndrome" was coined in1977 by Haller[1].

Previously it was estimated that 20%-25% of south Asians have developed metabolic syndrome and many more may be prone to it[2,3]. In South Asian countries, rapid increase in western fast food outlets, sale of aerated sweet drinks and increased consumption of fried snacks is being commonly seen. Further, migration from villages to cities is increasing. These intra-country migrants become urbanized, mechanised, resulting in nutritional imbalance, physical inactivity, stress, and increased consumption of alcohol and tobacco[4]. Although there is general consensus that obesity and metabolic syndrome requires greater attention, there is disagreement over the diagnostic criteria of metabolic syndrome. Different criteria used for diagnosing Metabolic Syndrome provide differing results. Expert groups from the International Diabetes Federation (IDF), National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III), World Health Organisation (WHO) etc have different diagnostic criteria.[5,6,7]

Little information exists on prevalence of metabolic syndrome in India. There is no any literature comparing modified NCEP ATP III and IDF criteria. The employees spend most of the time of their life in their working place. So, we planned to study the prevalence of metabolic syndrome among medical professionals of Bikaner and to compare revised NCEP ATP III and IDF criteria.

Material and methods

This was a cross-sectional epidemiological study investigating prevalence of metabolic syndrome among medical professionals of Bikaner and compared the NCEP and IDF criteria. 390 Participants were recruited, all were more than 30 years of age. Exclusion criteria for the participants were- seriously ill patients, patient on long term corticosteroid therapy, hypothyroidism, spine deformity, ascites due to any cause, nephrotic syndrome, pregnant females and lactating mothers. The data were collected on a specially designed proforma having multiple questionnaires describing baseline demographic profile, personal habits and physical exercise, job stress, work load and sleep pattern. Participants underwent detailed physical and laboratory testing. Laboratory measurements were done after at least 8 hours of fasting. NCEP and IDF Criteria in Indian Reference[6,7] were used to reveal the prevalence of metabolic syndrome and both were compared.

Statistical Analyses:

Analyses were completed using SUDANN (version 8.0) to take into account sample weights and design effects.

Observations

In our study, prevalence of metabolic syndrome was 51.54% and 47.95% according to NCEP and IDF criteria respectively. The prevalence was more in doctors than paramedical staff. Prevalence in females was 49.19 % while in males was 43.37% as per IDF criteria while as per revised NCEP criteria this was 53.22% and 50.75% respectively. Increased waist circumference was in 46.67% and in 51.28% as per revised NCEP and IDF criteria. Abnormal SBP, abnormal DBP, increased FBS, increased triglyceride and deranged HDL were in 36.97%, 21.79%, 26.15%, 51.28% and 46.92% cases respectively(table 1).

Table 1. Distribution of Prevalence of components of Metabolic Syndrome

Variables	Profession		Overall Prevalence
	Doctor	Staff	
Waist (IDF criteria)	97(53.89%)	103(49.05%)	200 (51.28%)
Waist (Revised NCEP criteria)	88(48.89%)	94(44.77%)	182(46.67%)
FBS	44 (24.44%)	58 (27.62%)	102 (26.15%)
Systolic BP	70 (38.89%)	74 (35.24%)	144 (36.97%)
Diastolic BP	45 (25%)	40 (19.05%)	85 (21.79%)
HDL	83 (46.11%)	100 (47.62%)	183 (46.92%)
Triglyceride	100 (55.56%)	100 (47.62%)	200 (51.28%)

Discussion

The overall prevalence of Metabolic Syndrome in the study group was high regardless of any criteria used. In our study overall prevalence of metabolic syndrome was 51.54% and 47.95% as per revised NCEP ATP III and IDF criteria respectively.

Garrido[8] et al (2009) study was done to determine the frequency of metabolic syndrome in 150 workers at Kanye Seventh-day Adventist Hospital, Kanye, Botswana with the criteria of the ATPIII. Out of the 150 participants 34.0% of the hospital's workers had metabolic syndrome. In our study that is 51.28% according to revised NCEP ATP III criteria.

The prevalence of metabolic syndrome was more common in doctors versus paramedical staff; females versus males and increases with age. The prevalence of metabolic syndrome was much more than the general population. Metabolic syndrome in urban eastern India has been found to be 33.5%[9]. Effect of differences in life and behavior such as physical inactivity, job stress, work load ,altered sleep pattern, more alcoholic consumption etc. in the general population are the major determining factors.

Our results showed both the modified NCEP ATP III and IDF criteria similarly diagnosed 93.5% of participants as having Metabolic Syndrome. The Kappa statistics also suggested high agreement between these two criteria after correction for agreement by chance. Despite the above similarities and agreement in the diagnosis of Metabolic Syndrome, these two criteria provided different prevalence estimates and identify different individuals. Similar to our findings, Lee et al and Xavier et al found higher prevalence of Metabolic Syndrome among Singaporeans and Japanese respectively using modified NCEP criteria compared to IDF criteria[10,11]. In another study among the Koreans, the IDF criteria too failed to identify 44.9% of men and 16.6% of women as having Metabolic Syndrome according to the modified NCEP Criteria.[12] The proportions of participants with diabetes and hypertension were not significantly different in the modified NCEP group or group diagnosed by both criteria. This demonstrated that the adverse levels as observed in the modified NCEP group were not due to higher proportions of participants with diabetes and hypertension. We are of the opinion that central obesity may not be the prerequisite for the development of increased cardiometabolic risks as reported elsewhere[10]. According to Lee at al[10], the definition of Metabolic Syndrome should have central obesity as an "optional" rather than "essential" criterion as this would identify more high risk individuals among the Asians. Similar recommendations were given in the recent Joint Scientific Statement in "Harmonizing the Metabolic Syndrome"[13] by the various expert groups. Their consensus was that there should not be an obligatory component. Any three abnormal findings out of five should suffice to diagnose a person as having Metabolic Syndrome. A single cut-off point would be used for all components except waist circumference where the interim national or regional cutoff points can be used. As this is a cross-sectional study, we cannot examine which criterion for diagnosing Metabolic Syndrome has better predictive power in diagnosing diabetes, CVD and premature death. Follow-up studies are needed to examine the significance of Metabolic Syndrome following all criteria for the assessment of risk for diabetes and/or CVD. As this study population was from a medical institute, the findings may not be easily generalized to the whole Indian population. However, it cannot be denied that this study is one of the few that compared the two different definitions of Metabolic Syndrome. There were several limitations of our study. The sample size in our study was small. There were not proper criteria to describe the job stress, physical activity, work load and sleep pattern.

Conclusion

Metabolic syndrome is common in the medical community regardless of the criterion used. The modified NCEP ATP III criteria may be more suitable in diagnosis of metabolic syndrome for Indian urban professional population. In the coming future, a large prospective study is further required to describe various predictors of CVDs in better correlation to MetS.

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