Original Research Paper

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General Medicine

PREVALENCE OF REAVEN SYNDROME IN CAD AND CVA PATIENTS.

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ABSTRACT

INTRODUCTION: The recognition of the existence of Reaven Syndorme or metabolic syndrome has developed over the last two decades, following the description of an insulin resistance syndrome or syndrome X in 1988.Depending on the definition used, the metabolic syndrome may include measures of general obesity (as reflected by BMI), central obesity (as reflected by WC or WHR), dyslipidemia (low HDL-C and / or high Triglyceride levels), hyperglycemia, high blood pressure and resistance to the action of Insulin. The increasing prevalence of obesity across the world will result in increasing prevalence of metabolic syndrome. The increasing prevalence of metabolic syndrome increases the risk for developing diabetes and cardiovascular disease. This study was conducted in hundred patients who presented with either CAD or CVA to know the prevalence of metabolic syndrome and its individual components as per NCEP: ATP III 2001 criteria.

AIMS AND OBJECTIVES 1.To assess the prevalence of Reaven Syndrome in CAD patients.2. To assess the prevalence of Reaven Syndrome in CVA patients.

MATERIALS AND METHODS: This study was conducted in ASRAM medical college, Eluru, Andhra pradesh. The study was conducted in the Department of Internal Medicine. The Study period extended between June 2017 to March 2019. All patients were thoroughly evaluated with a detailed history and appropriate investigations as per proforma. Metabolic syndrome in study subjects was diagnosed as per NCEP : ATP III 2001 criteria.

INCLUSION CRITERIA: 1.Patients who had ECG and ECHO findings suggestive of coronary Artery disease.2.Patients who had clinical & CT scan findings of cerebrovascular accident.3.Already known dyslipidemic, hypertensive & diabetic were also included.4.Patients who smoke and consume alcohol.5.Patients with family history of dyslipidemia, diabetes, Hypertension, CAD & CVA.

Exclusion Criteria: 1.Valvular Heart disease.2.Patients on Antipsychotics, antiretroviral therapy

3.Patient on oral contraceptives.

SAMPLE SIZE: 100 patients (50 CAD and 50 CVA patients)

RESULTS: A total of 100 subjects were included in the analysis. Descriptive analysis for age in study population: Descriptive analysis of demographic in study population: Among the study population, 22% were up to 50 years. The proportion of 51 to 60 year, 61 to 70 year and 71 and above year age group was 30%, 26% and 22% respectively. Among the study population, 61% were male and 39% were female. Descriptive analysis of Comorbidities in study population: Among the study population, 26% people had known case of diabetes mellitus and 33% people had known of case hypertension. Prevalence of substance use in study population: Among the study population, 41% people had smoker and 41% people had alcohol.

KEYWORDS : Reaven Syndrome, Syndrome X, Metabolic syndrome, cerebrovascular accidents, coronary artery disease Triglycerides, Dyslipidemia, Insulin Resistance, Prothrombin, Free fatty acids, obstructive sleep apnea,

INTRODUCTION

The recognition of the existence of metabolic syndrome (MetS) has developed over the last two decades, following the description of an insulin resistance syndrome or syndrome X in 1988.Depending on the definition used, the metabolic syndrome may include measures of general obesity (as reflected by BMI), central obesity (as reflected by WC or WHR), dyslipidemia (low HDL-C and / or high Triglyceride levels), hyperglycemia, high blood pressure and resistance to the action of Insulin. The increasing prevalence of obesity across the world will result in increasing prevalence of metabolic syndrome. The increasing prevalence of metabolic syndrome increases the risk for developing diabetes and cardiovascular disease. This study was conducted in 100 patients who presented with either CAD or CVA to know the prevalence of metabolic syndrome and its individual components as per NCEP: ATP III 2001 criteria.

Pathogensis Of Metabolic Syndrome: Sedentary lifestyle and high dietary caloric intake leads to decreased free fatty acid and glucose oxidation leading on to body fat accumulation and resistance to biological action of Insulin.Increasing levels of obesity leads to increased secretion of proinflammatory cytokines like TNF ά, IL-6, IL-Iβ from adipose tissue. These cytokines leads to: Decreased Insulin induced suppression of hepatic glucose production, Increased Fatty acid and cholesterol synthesis, Increased Hepatic VLDL production, Increased Adipocyte lipolysis.

Components And Consequences Of Metabolic Syndrome: Visceral obesity, Hypertension, Insulin Resistance and Type 2 DM, Dyslipidemia, Atherosclerosis, Prothrombotic state, Endothelial dysfunction, Microalbuminuria , Polycystic Ovary syndrome, Non - alcoholic steato hepatitis, Inflammatory markers, Obstructive sleep apnea.

Definitions Of Reaven Syndrome Or Metabolic Syndrome Or Syndrome X :

NCEP ATP IIII (≥3 Criteria)	AHA/NHLBI (3 Criteria)	IDF (Obesity + ≥other criteria)	WHO (Insulin Resistance +≥ 2Other criteria)
WAIST CRICUMFERENCE			**Body Mass**
>40 inch(102 cm) (men) > 35 inch(88 cm) (women)	≥ 40 inch (men) ≥ 35 inch (female)	Ethnicity Specific Ethnicity Specific	> 30 kg / m2 and / or WHR > 0.9 (men) >0.85 (women)
TRIGLYCERIDES			
> 150 mg/dl	> 150 mg/dl or treatment for hypertriglyeridemia	≥ 150mg / dl or treatment for hypertriglyceridemia	≥ 150 mg / dl

HIGH DENSITY LIPOPROTEIN CHOLESTEROL (HDL - C)			
< 40 mg / dl (men) <50 mg / dl (women)	< 40 mg / dl (men) < 50mg / dl (women) or On treatment for Low HDL-C.	< 40 mg / dl (men) < 50 mg / dl (women) or on treatment for low HDL-C	< 35 mg / dl (men) <40 mg/dl (women)
BLOOD PRESSURE			
≥ 130/ 85 mm Hg or on treatment for HTN	≥ 135/85 mmHg (or) on treatment for HTN	≥ 130 / 85 mm Hg or on treatment for HTN.	≥ 140/90 mm Hg (or) on treatment for HTN
FASTING GLUCOSE		**INSULIN RESISTANCE**	
100-125 mg/dl	≥ 100mg / dl (or) on treatment for Hyperglycemia	≥ 100mg / dl (or) diagnosis of DM	Type 2DM, IFG, IGT
			URINARY ALBUMIN
			> 20 mg/ ml
			ALBUMIN CR RATIO
			> 30 mg / g

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All patients were thoroughly evaluated with a detailed history and appropriate investigations as per proforma. Metabolic syndrome in study subjects was diagnosed as per NCEP : ATP III 2001 criteria.

INCLUSION CRITERIA:

Patients who had ECG and ECHO findings suggestive of coronary Artery disease.

1. Patients who had clinical & CT scan findings of cerebrovascular accident.
2. Already known dyslipidemic, hypertensive & diabetic were also included.
3. Patients who smoke and consume alcohol.
4. Patients with family history of dyslipidemia, diabetes, Hypertension, CAD & CVA.

Exclusion Criteria:

1. Valvular Heart disease.
2. Patients on Antipsychotics, antiretroviral therapy
3. Patient on oral contraceptives.

SAMPLE SIZE: 100 patients (50 CAD and 50 CVA patients)

METHODS:

1. To measure waist circumference, top of right iliac crest located. A measuring tape was placed in a horizontal plane around abdomen at level of iliac crest. Before reading measurement, it is estimated that the tape is snug but does not compress the skin and is parallel to floor. Measurement was at the end of normal expiration.
2. Blood samples for fasting blood glucose were taken after eight hours overnight fast.
3. Blood samples for lipid profile were taken after 12 hours overnight fast.
4. Blood pressure was recorded in right upper limb with patient in sitting posture and for CVA patients it was recorded in supine posture.

RESULTS

A total of 100 subjects were included in the analysis.

Descriptive analysis for age in study population:

The mean of age was 59.79 years with a standard deviation of 12.73. The youngest person was 26 years old and the oldest person was 87-years-old.

Descriptive analysis of demographic in study population:

Among the study population, 22% were up to 50 years. The proportion of 51 to 60 year, 61 to 70 year and 71 and above year age group was 30%, 26% and 22% respectively. Among the study population, 61% were male and 39% were female.

Descriptive analysis of Comorbidities in study population:

Among the study population, 26% people had known case of diabetes mellitus and 33% people had known of case hypertension.

Prevalence of substance use in study population:

Among the study population, 41% people had smoker and 41% people had alcohol.

Descriptive analysis of family history in study population:

In the study population, 24% people had family history of CAD/stroke.

Descriptive analysis of ECG in study population:

Among the study population, 42% seen within normal limits. The proportion of IWMI, ASMI, AWMI, Left Ventricular Hypertrophy, IWMI+PWMI, Ext.AWMI, ALMI, ILMI and IPWMI+RVMI were 16%, 11%, 8%, 6%, 4%, 3% and 1% respectively.

Descriptive analysis of metabolic syndrome in study population:

Inthe study population, 49% people had metabolic syndrome.

Descriptive analysis of CT brain in study population: Among the study population, 50% people had CAHD. The proportion of left capsular infarct, left MCA infarct, right MCA infarct and right capsular infarct was 5% ,19%, 22% and 4% respectively.

Descriptive analysis for blood sugar and lipid profile in study population:

The mean systolic BP was 143.1 ± 21.73 (mm/Hg)with minimum 100 (mm/Hg)and maximum 190 (mm/Hg)in study population. The mean diastolic BP was 88.64 ± 10.88 (mm/Hg))with minimum 60 (mm/Hg)and 110 (mm/Hg)in study population. The mean fasting blood glucose was 108.05 ± 32.42 (mg/dl) with minimum 60 (mg/dl) and maximum 242 (mg/dl) in study population. The mean HDL Cholesterol was 41.24 ± 7.11 (mg/dl) with minimum 22(mg/dl) and maximum 58 (mg/dl) in study population. The mean triglycerides was 141.2 ± 42.55 (mg/dl) with minimum 49(mg/dl) and maximum 307 (mg/dl) in study population. The mean LDL cholesterol was 112.54 ± 28.83 (mg/dl) with minimum 45(mg/dl) and maximum 198 (mg/dl) in study population. The mean total cholesterol was 182.1 ± 28.88 (mg/dl) with minimum 115 (mg/dl) and maximum 271 (mg/dl) in study population.

Descriptive analysis for waist circumference in study population:

The mean waist circumference was 83.99 ± 10.39 cm with minimum 160 cmand maximum 110 cm in study population.

Components of metabolic syndrome in study population:

Among the study population, 13% people had waist circumference. The number of hypertension, fasting blood glucose, HDL cholesterol and triglycerides was 68%, 46%, 67%, and 45% respectively.

Comparison of metabolic syndrome with age group of study population:

Out of 22 people up to 50 year age group, 13 (59.09%) had metabolic syndrome. Out of 30 people 51 to 60 year age group, 15 (50%) had metabolic syndrome. Out of 26 people 61 to 70 year age group, 11 (42.30%) had metabolic syndrome. Out of 22 people 71 and above year age group, 10 (45.45%) had metabolic syndrome.

Comparison of metabolic syndrome with gender of study population:

Out of 61 people males, 35 (57.37%) had metabolic syndrome. Out of 39 people females, 14 (35.89%) had metabolic syndrome. The difference in proportion of gender among metabolic syndrome was statistically significant.

DISCUSSION:

In this study, the mean of age was 59.79 years with a standard deviation of 12.73. The youngest person was 26 years old and the oldest person was 87-years-old.

In this study it is observed that prevalence of CAD and CVA in a total of 100 cases is more common in males when compared to females. Out of 22 people up to 50-year age group, 13 (59.09%) had metabolic syndrome. Out of 30 people 51 to 60-year age group, 15 (50%) had metabolic syndrome.

Out of 26 people 61 to 70 year age group, 11 (42.30%) had metabolic syndrome. Out of 22 people 71 and above year age group, 10 (45.45%) had metabolic syndrome.Out of 61 people males, 35 (57.37%) had metabolic syndrome. Out of 39 people females, 14 (35.89%) had metabolic syndrome Out of 26 people with known case of diabetes mellitus, 21 (80.76%) had metabolic syndrome.

Out of 33 people with known case of hypertension, 27 (81.81%) had metabolic syndrome. This study shows that metabolic syndrome is highly prevalent in hypertensives almost 73% when compared to 37% in non hypertensives. Out of 41 people smoker, 19 (46.34%) had metabolic syndrome.Out of 41 people alcohol, 15 (36.58%) had metabolic syndrome.

Out of 50 people with CVA, 23 (46%) had metabolic syndrome.Out of 50 people with CAD 26 (52%) had metabolic syndrome.Prevalence of metabolic syndrome was about 52 % in CAD patients and 46 % in stroke patients as per this study.

Among the study population, 13% people had high waist circumference. The proportion of people with hypertension, high fasting blood glucose/DM, low HDL cholesterol and high triglycerides was 68%, 46%, 67%, and 45% respectively.

CONCLUSION

CAD AND METABOLIC SYNDROME:

Coronary artery disease is typically defined as a >50 % stenosis of any epicardial coronary artery most commonly due to obstruction by atheromatous plaques.

Manifestations of CAD include stable angina, acute coronary syndrome, congestive heart failure, sudden cardiac death and silent ischemia. Metabolic syndrome with its clustered risk factors is known to promote or increase the risk of development of cardiovascular disease.

Applying Framingham global risk algorithms to U.S. Populations with metabolic syndrome but without Diabetes, 45 % of men and 42% women were found to be at intermediate risk (10-20%) of CAD another 20 % of men & 2% of women at high risk (>20%) of CAD in the next 10 years.

CVA AND METABOLIC SYNDROME:

Stroke is the abrupt onset of neurologic deficit that correspond to interruption of vascular supply to a specific brain region. A stroke may be ischemic or haemorrhagic.

The most recent definition of stroke for clinical trials has required either symptoms lasting > 24 hours or imaging of an acute clinically relevant brain lesion in patients with rapidly vanishing symptoms.

After adjustments for age, sex, history of CAD & CRP level, individuals with metabolic syndrome were more than twice as likely as those without it to show evidence of silent brain infarctions on MRI. Metabolic syndrome is associated with intracranial and extra cranial atherosclerotic disease. Individuals with MetS have an increased prevalence of carotid intima - media thickness, asymptomatic carotid atherosclerotic plaques, and leukoaraiosis in healthy.

SUMMARY

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Prevalence of substance use in study population:

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Descriptive analysis of family history in study population:

In the study population, 24% people had family history of CAD/stroke.

REFERENCES

1. Savage DB, Tan GD, Acerini CL, Jebb SA, Agostini M, Gurnell M, et al. Human metabolic syndrome resulting from dominant-negative mutations in the nuclear receptor peroxisome proliferator-activated receptor-gamma. Diabetes. 2003;52(4):910-7.
2. Eckel RH, Grundy SM, Zimmet PZ. The metabolic syndrome. Lancet. 2005;365(9468):1415-28.
3. Lee L, Sanders RA. Metabolic Syndrome. Pediatrics in Review. 2012;33(10):459-68.
4. Bruce KD, Cagampang FR. Epigenetic priming of the metabolic syndrome. Toxicol Mech Methods. 2011;21(4):353-61.
5. Gupta R, Deedwania PC, Gupta A, Rastogi S, Panwar RB, Kothari K. Prevalence of metabolic syndrome in an Indian urban population. Int J Cardiol. 2004;97(2):257-61.
6. Mohan V, Shanthirani S, Deepa R, Premalatha G, Sastry NG, Saroja R. Intra-urban differences in the prevalence of the metabolic syndrome in southern India -- the Chennai Urban Population Study (CUPS No. 4). Diabet Med. 2001;18(4):280-7.
7. Kahn R, Buse J, Ferrannini E, Stern M. The metabolic syndrome: time for a critical appraisal: joint statement from the American Diabetes Association and the European Association for the Study of Diabetes. Diabetes Care. 2005;28(9):2289-304.
8. Ho SC, Chen YM, Woo JL, Leung SS, Lam TH, Janus ED. Association between simple anthropometric indices and cardiovascular risk factors. Int J Obes Relat Metab Disord. 2001;25(11):1689-97.
9. McKeown NM, Meigs JB, Liu S, Saltzman E, Wilson PW, Jacques PF. Carbohydrate nutrition, insulin resistance, and the prevalence of the metabolic syndrome in the Framingham Offspring Cohort. Diabetes Care. 2004;27(2):538-46.
10. Dodani S, MacLean DD, LaPorte RE, Joffres M. Distribution and determinants of coronary artery disease in an urban Pakistani setting. Ethn Dis. 2005;15(3):429-35.
11. Weiss R, Dziura J, Burgert TS, Tamborlane WV, Taksali SE, Yeckel CW, et al. Obesity and the Metabolic Syndrome in Children and Adolescents. New England Journal of Medicine. 2004;350(23):2362-74.
12. Onat A, Ceyhan K, Basar O, Erer B, Toprak S, Sansoy V. Metabolic syndrome: major impact on coronary risk in a population with low cholesterol levels--a prospective and cross-sectional evaluation. Atherosclerosis. 2002;165(2):285-92.
13. McKeigue PM, Miller GJ, Marmot MG. Coronary heart disease in south Asians overseas: a review. J Clin Epidemiol. 1989;42(7):597-609.
14. Yarbrough DE, Barrett-Connor E, Kritz-Silverstein D, Wingard DL. Birth weight, adult weight, and girth as predictors of the metabolic syndrome in postmenopausal women: the Rancho Bernardo Study. Diabetes Care. 1998;21(10):1652-8.
15. Ramachandran A, Snehalatha C, Satyavani K, Sivasankari S, Vijay V. Metabolic syndrome in urban Asian Indian adults--a population study using modified ATP III criteria. Diabetes Res Clin Pract. 2003;60(3):199-204.
16. Harrison's principles of Internal Medicine 20th edition.