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Atherosclerosis and Macromolecular Lipoproteins

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Abstract—

The aim of this study is to seek out the link between macromolecular (lipid) profile and fatness in adult Saudi Arabians and to correlate them with estimates obtained from standard body weight cluster. Obesity is a progressively prevailing metabolic disorder upsetting developed and developing countries also. This study was aimed to analyze the connection between corpulence and macromolecular (lipid) profiles and to check them with those with standard body weight. To execute the task 60 adult Saudi Arabians (50 corpulent and ten control) were selected with age varies from 29-51 years. Body mass index (BMI) is the ratio of Weight (kg) over height (m)². Blood samples were withdrawn for analysis of total sterol, Triglycerides (TG), Alpha lipoprotein (HDL), beta lipoprotein (LDL), FBS, HbA1c, Urea, Creatinine, TSH, and liver enzymes. Macromolecular (lipid) profile values in corpulent subjects (BMI > 30) were compared with those with standard weight (BMI < 25). The corpulent group had higher triglycerides TG, and beta lipoproteins (LDL) and total sterol Tc, with the numerous variations (P < 0.05) in comparison to standard weight cluster, where's alpha lipoproteins HDLc was considerably lower in corpulent subjects. This study shows a major association between fatness and dyslipidemia. With many complications associated fleshiness, specially the macromolecular (lipid) abnormalities that are a predominant reason behind morbidity, and mortality, it is of importance, that the prevalence of fleshiness must be reduced.

Keywords— Atherosclerosis, alpha and beta lipoproteins, obesity, body mass index

I. INTRODUCTION

Occurrence of death due to non-communicable chronic diseases is much higher than that of all communicable diseases [1, 2]. Reason behind premature mortality, morbidity, and high health care costs are occurring due to cardiovascular diseases and it remains [3]. Risk factors like high blood pressure, cholesterol, overweight/obesity, tobacco use, lack of physical activity, and diabetes can be controlled, treated or modified which are the cause for appearance of cardiovascular diseases. Obesity is one of the most avertable health disorders, according to the World Health Organization [4]. There is considerable increase in prevalence of obesity is reported in both developed and developing countries during the past three decades [5-7]. About 64th of Saudi Arabian adults are either overweight or corpulent, obesity is more and more increasing with age, and two times more common among Saudi Arabian girls than men [8]. Imbalance between energy intake and expenditure has been thought to be associated with obesity. However, analysis has instructed that genetic, physiological, and behavioural factors also play a significant role in the etiology of fatness [9]. Disorders such as osteoarthritis, hyperuricemia, hypertension, obstructive sleep apnea, and certain types of cancer, metabolic syndrome, coronary heart disease, liver disease, hyperlipidemias, type 2 diabetes, and gallbladder disease are highly related to obesity [10-17].

The people who are linked with any of these morbidities and conditions obviously will be showing higher rate obesity, than individuals or cluster of people who are not suffering from any of these co-morbidities. Corpulent individuals have a exaggerated overall morbidity and mortality rates compared to the standard weight population [18]. Till recently the relation between obesity and coronary cardiopathy was viewed as indirect, through high blood pressure, dyslipidemia, and impaired aldohexose tolerance. However, semipermanent longitudinal studies indicate that fatness intrinsically not solely relates to however independently predicts coronary hardening of the arteries [19-20].

II. MATERIALS AND METHOD

From outpatients clinic (Ad - Dawadim, Saudi Arabia), 60 (50 corpulent and 10 normal) subjects were selected with age varies from twenty nine - fifty one years. Subjects with history of polygenic disease, high blood pressure, cardiovascular, renal, liver, or thyroid sickness were excluded.

Complete clinical examination and detailed history and were performed. Subjects were asked to remain in a nightlong abstinence state (11-13 hours). Height was measured in centimetre, weight in kg, and body mass index (BMI) was computed using the mathematical rule: Weight (kg) divided by Height (m)². Blood samples were withdrawn for analysis of FBS, Urea, Creatinin, TSH, Total cholesterin (Tc), liver enzymes, Triglycerides (TG), alpha-lipoprotein (HDL), beta-lipoprotein (LDL), and HbA1c.

Those with BMI < 25 were thought-about traditional, and BMI > thirty were considered corpulent, in line with World Health Organization (global information on body mass index BMI).

Data were conferred as means that ±Standard Deviation. Macromolecular (lipid) profile values in corpulent subjects (BMI > 30) were compared with those with traditional body weight (BMI < 25). For the importance of the distinction in the mean values, student t-test was applied, P < 0.05 was thought of statistically vital.

III. RESULTS

The sample size of sixty Saudi Arabians conferred in table -1, comprised of fifty corpulent, among them thirty one females (62 %), nineteen males (38%), and ten control traditional persons, six females (60%), and four males (40%). Distribution of males, females, and age between corpulent and control cluster wasn't completely different statistically.

TABLE I AVERAGE AGE GROUP AND SAMPLE SIZE

	Obesi BMI >30	**Standard BMI < 25**
Studied Number	50	10
Males	19(38%)	4 (40%)
Females	31(62%)	6(60%)
Age Mean ± SD	40±8.7	42±9.1

The corpulent cluster had higher total cholesterin Tc, triglycerides TG, and beta-lipoprotein LDL with the numerous differences ($P < 0.05$) when compared to traditional weight cluster, where's high density lipoproteins HDL-c was considerably lower in corpulent subjects.

TABLE III SHOWS A COMPARISON BETWEEN CORPULENT AND TRADITIONAL WEIGHT LIPIDE PROFILE SAUDI ARABIANS.

Lipid profile (mg/dl)	**Obese BMI > 30**	**Normal BMI < 25**
Total cholesterin - T_c	209.2±21.0	148.2±23.4*
Triglycerides TG	194.7±19.2	135.2±14.9*
Beta-lipoprotein LDL-c	131.2±14.1	76.98±4.5*
Alpha-lipoprotein HDL-c	37.5±4.8	47.3±3.7*

*Statistically significant P<0.05

IV. DISSCUSSION

From table-1 there was no important statistical distinction between rotund and traditional weight teams in sex distribution and mean age. Different potential factors for macromolecular (lipid) abnormalities (renal, liver, thyroid disorders, diabetes, and high blood pressure), consuming drugs like diuretics, steroids, smokers, alcoholics, and macromolecular (lipid) lowering drugs were not included in this the study.

Higher levels of total cholesterin, beta-lipoprotein LDL-c, and triglycerides TG, among the rotund cluster (statistically vital $P < 0.05$) is identified in this study. However, HDL-c was lower for the similar group (statistically important, also $P < 0.05$), that concurs with the reports of previous studies [21-22].

V. CONCLUSIONS

The exaggerated levels of total sterol, triglycerides, LDL, and low levels of high-density lipoprotein associated with fatness showing higher rate of risk of cardiovascular diseases in fatness.

With many complications associated fatness, especially the macromolecular (lipid) abnormalities that are most appropriate reason for morbidity, and mortality, it's of importance, that the prevalence of fatness must be reduced. Early detection and deterrence of fatness and abnormal macromolecular (lipid) profile will facilitate to diminish morbidity, and mortality through rising public awareness concerning healthy life-style and food habit.

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