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Body Mass Index, Central Obesity Relationship Between Blood Lipid Levels and Snoring

H. YAZAR*, A.M. TIFTIK and SADAK BYKBA
Departmant of Biochemistry, Medical Faculty, Bozok Universty, 66200 Yozgat, Turkey
Fax: (90)(354)2122789; Tel: (90)(354)2126094; E-mail: drhyazar@hotmail.com

Obesity is an excessive fat deposits, is still worldwide increase. Many metabolic disorders of obesity are believed to be caused by abdominal central fat (central or abdominal obesity). In present studies, a relationship between blood lipid levels and BMI, obsity and snoring is established.

Key Words: Central obesty, Body mass index, Snore.

INTRODUCTION

Obesity is an increasing health concern in Western countries. In the general population, a relationship between obesity and increased mortality has been shown[1,2]. The metabolic syndrome, a collection of clinical measures that include insulin resistance, abnormal glucose tolerance, abnormal lipid levels and high BP, is linked with obesity[3]. However, it is not clearified that whether there is a difference in the prevalence of hypertension or snoring disorders between non-obese and obese person based on the presence or absence of snoring.

In the present study, an attempt is made to prove that body mass index, central obesity and the blood lipid levels are related to each other. Only a few reports[4,5] are available on this subject in literature.

EXPERIMENTAL

Present study has been done on 1006 adult polyclinic patients consists of 598 female patients and 408 male patients between the age of age of 25-55 admitted in Cumra Goverment Hospital, Turkey.

Body mass index (BMI): Obesity are grouped as O1 group and O2 group. O1 group (non-obesty group): BMI values, under 30 and O2 group (obesity group) as BMI values 30 and above an assessment.

The measure used to evaluate body weight is relative to a person's height. BMI is used to find out if a person is in normal weight O1 group, overweight O2 group, obese.

Central obesity: Belt chamber measurement is grouped into two men and two women group including the group 4:

Women+group: Belt chamber measurement 88 cm and above .
Women-group: Belt chamber measurement under 88 cm.
Men+group: Belt chamber measurement 102 cm and above.
Men-group: Belt chamber measurement under 102 cm.

Snore group: Snore (obstructive sleep syndrome) assessment is grouped as follows: S0: not snoring, S1: sometimes snoring, S2: always snoring.

Including work criteria: (1) Fasting blood glucose (FBG), C reactive protein (CRP), alkali phosphatase (ALP), serum glutamic oxaloacetic transaminase or aspartate aminotransferase (SGOT/ASAT), serum glutamic pyruvic transaminase or alanine transaminase (SGPT/ALT), thyroid stimulating hormone (TSH), free thyroid 3 (FT3), free thyroid 4 (FT4), blood urea and blood creatine levels within normal limits. (2) Being out of dialysis application; (3) Not being in the treament of malinty; (4) During the last three monts, not undergone by serious surgical treatment; (5) Being between the ages of 25-55 during collection of their blood samples.

Application of polyclinics with the criteria given above, who obey physical measurements, were taken and blood samples of the 12 h following the fasting in the morning (08:00-09:30 AM) and vacuumed vials are taken.

From collected samples, all sera were centrifuged after clotting and triglyceride, total cholesterol, HDL, LDL analysis tests were performed simultaneously. These tests were performed using thermo electron HDL:981657 equipment on conelab 60 i automated test device.

Body mass index (obesity):

BMI = BW (body weight) (kg)/BH (body heigh square) (m^2)

RESULTS AND DISCUSSION

Obesty (body mass index): O1 group (non obesity); BMI values 30 under 527 adult patient (% 52) formation, O2 group BMI 30 and above (obesity group) 479 adult patient (% 48) were determined.

Central obesty (belt chamber): W+ group: Belt chamber 88 cm and above 219 women adult patients (37 %), W-group: Belt chamber 88 cm under 379 women adult patients (63 %), M+ grubu: Belt chamber 102 cm and above 151 adult men patient (37 %) and M-group: Belt chamber 102 cm under 257 adult men patient (63 %) were determined.

Snore groups: Snore (obstructive sleep apne syndrome) assessment; S0: not snoring adult patients, S1: sometimes snoring adult patients, S2: always snoring adult patints, three variety are grouped.

The interrogations were registered to poll form, S0: not snoring 317 adult polclinic patients, S1: sometimes snoring 459 person adult polclinic patients, S2: always snoring in a bothering way 230 adult polclinic patients was evaluated.

Lipid values

Triglyceride (TG): From the obtained data when 1006 adult patients average triglyceride levels are found as 167.80 ± 98.43 mg/dl all age as the average for adult men patients are faund 174.37±102.69 mg/dl women adult patients 163.31 ± 95.25 mg/dl were determined (Table-1). **Cholesterol:** This study shows men and women total 1006 adult patients average cholesterol levels are faund as 196.66 ±

TABLE-1
DIFFERENT BLOOD LEVEL PARAMETERS IN BMI GROUPS

BMI	Snore	Frekans	Mean	SD	Calculate	p value
Triglycerides (mg/dl)						
Normal	S0	154	150.305	80.58	Kikare = 3.320	0.190
	S1	250	172.472	105.02		
	S2	123	170.610	120.86		
Obesity	S0	163	167.460	92.51	Kikare = 0.967	0.617
	S1	209	176.689	100.65		
	S2	107	162.019	78.23		
Cholesterol (mg/dl)						
Normal	S0	154	191.7987	40.64	Kikare = 6.197	0.045
	S1	250	201.2680	44.27		
	S2	123	193.3902	45.15		
Obesity	S0	163	196.5951	46.78	Kikare = 0.577	0.749
	S1	209	198.5742	49.15		
	S2	107	193.0093	40.09		
HDL Cholesterol (mg/dl)						
Normal	S0	154	53.3247	11.28	Kikare = 8.032	0.018
	S1	250	50.2000	12.73		
	S2	123	50.6667	12.70		
Obesity	S0	163	51.3006	12.83	Kikare = 2.921	0.232
	S1	209	49.7751	11.86		
	S2	107	48.7757	11.87		
LDL Cholesterol (mg/dl)						
Normal	S0	154	112.2377	36.41	Kikare = 7.669	0.022
	S1	250	120.9984	36.73		
	S2	123	112.8455	40.53		
Obesity	S0	163	114.2221	39.76	Kikare = 0.139	0.933
	S1	209	114.6344	41.24		
	S2	107	113.9439	35.20		

44.93 mg/dl, men these data as 191.76 ± 43.55 mg/dl women as 200.00 ± 45.59 mg/dl (Table-1). **HDL Cholesterol:** Average HDL cholesterol levels in blood serum 1006 adult patients 50.67±12.30 mg/dl, this data men adult patients as 48.11±12.59 mg/dl, women adult patients as 52.41 ± 11.80 mg/dl are determined (Table-1). **LDL cholesterol:** Average LDL cholesterol levels in blood serum all adult patients as 115.49 ± 38.52 mg/dl, this data men adult patients as 112.23 ± 36.19 mg/dl, this data women adult patients as 117.71 ± 39.90 mg/dl are determined (Table-1).

Conclusion

These obtained results show that the triglyceride level in the definition of 'high frontier' between 150/190 mg/dl (Table-1). In this study with TG connection snore are not significant (Table-1, $p > 0.05$). This study with blood cholesterol level are releated snore in (Tables 1 and 2, $p < 0.05$).

TABLE-2
DIFFERENT BLOOD LEVEL PARAMETERS IN CENTRAL OBESITY GROUPS

Central obesity	Snore	Frekans	Mean	SD	Calculate	p value
Triglycerides (mg/dl)						
(–)	S0	207	135.4300	65.38915	Kikare = 0.896	0.639
	S1	286	135.9056	69.39302		
	S2	143	127.3636	51.00781		
(+)	S0	110	203.7182	104.39007	Kikare = 6.713	0.035
	S1	173	238.0173	117.11545		
	S2	87	231.1264	131.33968		
Cholesterol (mg/dl)						
(–)	S0	207	186.4638	39.42176	Kikare = 0.788	0.674
	S1	286	187.0734	39.75793		
	S2	143	183.8182	36.63036		
(+)	S0	110	208.9455	48.15930	Kikare = 7.043	0.030
	S1	173	221.4798	49.02213		
	S2	87	208.6552	47.65375		
HDL Cholesterol (mg/dl)						
(–)	S0	207	53.6135	11.91700	Kikare = 9.579	0.008
	S1	286	50.4406	12.45405		
	S2	143	51.7832	12.71748		
(+)	S0	110	49.7818	12.19444	Kikare = 3.913	0.141
	S1	173	49.2890	12.13958		
	S2	87	46.5057	10.98082		
LDL Cholesterol (mg/dl)						
(–)	S0	207	108.5662	34.51761	Kikare = 1.756	0.416
	S1	286	111.9958	36.59155		
	S2	143	107.5175	31.96055		
(+)	S0	110	122.0873	42.91690	Kikare = 2.776	0.250
	S1	173	128.1931	40.67465		
	S2	87	122.9540	44.97620		

When looked other blood lipids (HDL and LDL) body mass index and snore are releated (Table-1, $p < 0.05$). Central obesty are found that effective all the adult patients on cholesterol (Table-1, $p < 0.05$). Another important result is that, snore, central obesity and blood lipid levels (TG, HDL, LDL), among are seriously releated was determined (Table-2, $p < 0.05$). It is also concluded that cental obesity causes negative effective on lipid profile especially to the blood HDL cholesterol.

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