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RELATIONSHIP OF SERUM LEPTIN WITH CORONARY ARTERY DISEASE

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ABSTRACT

Background: Leptin a protein produced in adipose tissue is related to obesity/adiposity and coronary artery disease(C A D)

Objectives: To compare serum leptin in C A D patients with control

Patient: We studied two hundred adult Individuals consisting of equal number of patients and normal control Results: The serum leptin level is 17.57+4.39 S D in C A D patients as compared to normal control 6.82+3.05 S D . It is high in 109 in obese as compared to normal BMI 24 (P=<.05) irrespective of cardiac status .It is high (11.75+5.64) in female patients as compared to (11.07+4.77 S D) male patients.

Conclusion: The serum leptin level in C A D patients is significantly raised as compared to normal control. It is significantly high in obese patients. It is significantly high in female patients as compared to male patients .Higher studies are needed to study it's athrogenic potential.Anti obesity measures are needed to prevent CAD

INTRODUCTION

Obesity is a risk factor for ischemic heart disease[3] because it by itself is contributing to several risk factor including high blood pressure,dyslipidemia and diabetes. Etiology of athrosclerosis is not completely settled. Merely the presence of cholesterol in atheroma is now not considered as the initiator. Now etiology of coronary artery disease is considered as inflammatory condition resulting from suspected factors like infection and humoral factors. Leptin[1,2,3] is one of such humoral agent. Adipose tissue is considered as store house of fats in general concept. However it is now considered as endocrine organ and produces hormones like leptin and adiponectin. Leptin is anti obesity factor but relationship of leptin serum level and adiposity is also complex. Instead of low level in obese people[7] it is high due to resistance at receptor level. In normal female due to more adipose tissues it is produced in high amount, therefore level is high.

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Leptin acts on hypothalamus to inhibit appetite[7,10]. It accelerates metabolic rate and thermogenesis. It's action is extended to kidney, heart and sympathetic nervous system[13] to effect vasculature[7,8]. Resistence to it's action is selective for hypothalamous[13]. Action on vasculature is exerted by high level in a pathological way. This action includes hypertension[8], platelet aggregation, impairment of fibrinogenolysis and angioprliferative action[13]. This study was designed to see association as causal factor for the high leptin level in coronary artery disease.

PATIENTS AND METHODS

Stable patients admitted to cardiology and waiting for coronary angio were selected. After thorough investigations those without known risk were selected in random from 100 patients. Investigation free of cost was done by special arrangements. True Control cannot be considered without cardiac angio. However on clinical grounds and simple investigations like ECG and ETT 100 cases were selected.

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Table 1: General & Biochemical Characteristics

Parameters	Patients (n=100)	Control (n=100)	P Value
	Mean±SD	Mean±SD	
Age (yrs)	56.27±7.78	56.49±5.78	0.820
BMI (kg/m²)	27.67±4.58	24.99±4.35	0.000
Leptin	17.57±4.39	6.82±3.05	0.000
LDL (mg/dl)	105.08±36.80	98.85±39.47	0.249
HDL(mg/dl)	37.86±23.19	52.93±33.58	0.000

Table 2: Leptin levels for Angiographically Assessed Cardiac Patients and Normal Healthy Individuals (Control).

		Patient (n=100)	Control (n=100)	Chi. Sq	P Value
Leptin	Abnormal W=7.4 ng/mL M=3.8 ng/mL	90	42	55.339	.000
	Normal W=7.4 ng/mL M=3.8 ng/mL	10	58		

Table 3: Distribution of serum leptin in Angiographically Assessed Cardiac Patients and Normal Healthy Individuals (Control).

APO		Male	Female	Chi. Sq	P. Value
Leptin	Abnormal	50	30	0.01	0.928
	Normal	77	43		

Table 4: Leptin in angiographically assessed Cardiac Patients and Normal Healthy Individuals (Control) on the Basis of BMI.

BMI	Leptin (.....)		Chi.Sq	P Value
	Abnormal (132)	Normal (68)		
Normal	24	14	Ref erent	
Obese	55	31	0.01	0.932

RESULTS

Leptin level is high in female patients and strongly corelated with BMI. Leptin levels were significantly high in CAD patients (n=90) With a mean of (17.57±4.39) than normal control (n=42)with a mean of 6.82+3.05 (P=.000). Serum LDL was high in CAD(n=105) patients than normal control (n=98) (P=.289). However more significant change was in serum HDL level It was low (n=37) in CAD patients as compared to control (n=52) (P=.000).

DISCUSSION

The present study evaluates serum leptin level in cardiac and non cardiac patients. It augments previous studies by Hadi AR Hadi Khafaji et al[4] and Wolfgang lieb et al [5] that leptin levels are higher in CAD patients. It is contradicted by JP Lupien et al[12]. They are with the conclusion that Leptinemia is not a risk factor for ischemic heart diseasein men. To blame it as athrogenic needs higher level experiments as[13]. This study also supports previous study by Aizawa Abe M et al[7] that Obesity is associated with high leptin level and female being high in adipose tissue have high leptin level.

One very interesting feature of this study is the fact that 25 patients of CAD have higher leptin level in absence of other known risk factor like diabetes, smoking and dyslipidemia.

CONCLUSION

No doubt serum leptin is high in majority of CAD patients. Due to the fact that resistance to its action results in high level in obese and high level in those with more adipose action in normal sensitivity makes leptin level and CAD relationship [12] inconsistent.

To prove it as athrogenic needs more study [13,11]. Anti obesity measures like exercise ,caloric restrictions and drugs are needed to prevent CAD.

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