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Research Article

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A study on Assessment of Biochemical analysis of Obese NIDDM patients

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Abstract Worldwide epidemic exists with respect to diabetes mellitus, primarily because of increased rates of obesity. Lipoprotein abnormalities are common in overweight and obese patients with Diabetes and contribute significantly to its complications. The present study focused on Biochemical and Lipid profile of obese male NIDDM patients. For the purpose 35 members aged 45-55 years took part in the study. Random sampling procedures were used. All subjects belong to Guntur population, Govt. General Hospital, Guntur District, Andhra Pradesh, India. In the present study biochemical analysis *i.e.*, Fasting Blood glucose levels mg/dl, (FBG), post prandial blood glucose level mg/dl (PPBG) and glycosylated Hemoglobin % (HbA^{1c}) levels of male Obese NIDDM patients were collected and also Lipid profile, Total cholesterol (mg/dl), HDL - Cholesterol (mg/dl), LDL – Cholesterol (mg/dl) and Triglyceride (mg/dl) levels were also collected from the patients. Biochemical and Lipid profile levels were higher than the standards.

Keywords Obese NIDDM patients, Biochemical analysis and Lipid profile.

Introduction

Diabetes mellitus (DM) is a syndrome characterized by disordered metabolism and abnormally high blood sugar (hyperglycaemia) resulting from insufficient levels of the hormone insulin [1]. Obesity is a worldwide disease affecting population of all age groups and socio-economic levels, in both developed and developing countries. It is known to be a contributory risk factor for several disease States, including diabetes mellitus [2-4]. Trace elements are essential nutrients with regulatory, immunologic, and antioxidant functions resulting from their action as essential components or cofactors of enzymes throughout metabolism [3]. Trace elements and minerals influence the pathogenesis of obesity and diabetes and their complications, mainly through their involvement in peroxidation and inflammation [5]. The present study focuses attention on Biochemical parameters and nutritional profile of selected Obese NIDDM patients.

In obese people the metabolic disturbances are decompensate. Although, overweight is a preclinical condition, obesity is the clinically manifested metabolic disorder, including mineral imbalances [6]. Women seemed to be more at risk for toxic metal exposure than men and at the same time more vulnerable to micronutrient deficiency [7]. In this study were Focused on the serum lipid profile in obese Type 2diabetics.

Materials and Methods

Subjects and sampling

The present study focused on Biochemical and Lipid profile of obese male NIDDM patients. For the purpose 35 members aged 45-55 years took part in the study. Random sampling procedures were used. Out of 650 patients 35 were selected in keeping view of the research few things were considered *i.e.*, the patients must be Obese, Diabetic,

Gender and age etc. All subjects belong to Guntur population, Govt. General Hospital, Guntur District, Andhra Pradesh, India.

Biochemical Analysis

Estimation of blood glucose

Blood glucose levels in different samples were estimated by the GOD-POD method described by Carl *et al*. 1996 [8]. This method can be applicable for PPBG also.

Glycosylated hemoglobin levels (HbA_{1c})

Glycosylated hemoglobin in the blood was estimated by earlier reported method [9].

Lipid profile test

For lipid estimations, blood samples were taken after overnight fast between 8 a.m. to 10 a.m. Different lipid fractions estimated included total lipids, serum cholesterol, high density lipoprotein-cholesterol (HDL-C), low density lipoprotein-cholesterol (LDLC), triglycerides and phospholipids [11-13].

Results and Discussion

Table 1: Targets for the control of Blood parameters

Bio chemical parameters	Good	Fair	Poor
Fasting blood glucose levels(mg/dl)	80 - 110	111 - 125	>125
2 hours postprandial glucose levels (mg/dl)	120 – 140	141 – 200	>200
Glycosylated heamoglobin(%)(HbA1c)(Normal range:5-7)	< 7	7.5 – 8.5	>8.5
Total cholesterol(mg/dl)	<200	200 – 240	>240
HDL - Cholesterol(mg/dl)	>45	35 – 45	<35
LDL – Cholesterol(mg/dl)	<100	100 – 129	>130
Triglycerides(mg/dl)	<150	150 - 200	>200

Table2: Biochemical analysis of patients

S. No.	Biochemical assessment	Mean ± SD	Standards
1.	FBG (mg/dl)	145.92±2.85 (140.0-149.0)	80-120
2.	PPBG (mg/dl)	191.62 ±5.65 (183.0-200.0)	l90-145
3.	Hb A^{1c}(%)	10.46±0.56 (9.1-10.9)	6.5-7.0

Table 2 shows the mean values of Fasting blood glucose (FBG), post prandial blood glucose (PPBG) mg/dl and glycosylated hemoglobin ($HbA^{I}c$) (%) levels of Obese NIDDM male patients were 145.92±2.85mg/dl, 191.62 ±5.6585mg/dl and10.46±0.56 %. Biochemical mean values of obese NIDDM male patients were higher than the standards. *Sughanthi and Sardha (1991)* and *Snehalatha et al (2003)* have reported that prevalence of diabetes was higher after 40 years of age. Majority of the subjects had fasting blood glucose (FBG) levels in the range of 200-300 mg/dl and a few of them (8 per cent) had FBG level more than 400 mg/dl at the time of diagnosis of disease [14-15].

Table 3: Lipid profile of Obese NIDDM male patients

S. No.	Lipid profile	Mean±SD
1.	Total cholesterol (mg/dl)	237.30 ±17.5 (211.4-265.5)
2.	HDL - Cholesterol(mg/dl)	45.85±1.41 (43.0-48.0)
3.	LDL – Cholesterol(mg/dl)	151.65±18.34 (117.4-177.1)
4.	VLDL- Cholesterol(mg/dl)	40.45 ±3.59 (36.4-50.0)
5.	Triglycerides(mg/dl)	194.89 ± 10.73 (174.8-211.6)

Table 3 indicates Lipid profile of Obese NIDDM male patients. The mean ± SD Total Cholesterol of patients with NIDDM was 237.30 ±17.5 (ranges 211.4-265.5 mg/dl).The mean HDL – Cholesterol was 45.85±1.41 (43.0-48.0mg/dl). The mean LDL – Cholesterol values was 151.65±18.34 (117.4-177.1 mg/dl). The mean VLDL – Cholesterol values was 40.45 ±3.59 (36.4-50.0mg/dl).The mean Triglycerides values were 194.89 ± 10.73(174.8-

211.6mg/dl). Lipid profile mean values were higher than the standards. The present study results were in accordance with the studies Ghafoorunisa (1989), reported that type and quantity of dietary carbohydrate increases triglycerides. Higher concentration of sucrose increases total-c, LDL-c and lowers HDL-c, the activity of HMG COA reductive and incorporation of labeled acetate into cholesterol and was the highest in the case of sucrose and the lowest with the diet fed corn starch [16].

There are studies which seem to suggest that the lipoprotein distribution in Type 2 diabetes mellitus is not significantly altered by the degree of metabolic control [17-19].

Conclusion

In conclusion the present study indicated that the mean Biochemical values and Lipid profile of the Obese NIDDM patients higher than the standards. The present study sample obtained from the hospital only. Obese NIDDM patients must follow the principles in Diet and physical activity. Regular blood sugar level checking and Medication is also very important.

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