

Diabetes Mellitus and Alcoholism are Common Coexisting Disorders in Cases with Fasting Hypertriglyceridemia*

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SUMMARY

Undetected and unrecognized diabetes mellitus and alcoholism must be considered in patients with fasting hypertriglyceridemia.

Fasting hypertriglyceridaemia is found to be a common lipid disorder coexisting possibly with other disorders. Diabetes mellitus and alcoholism are the two most common causes of fasting hypertriglyceridaemia [1]. This study was carried out to find out the prevalence of unrecognized cases of alcoholism and diabetes mellitus in a segment of cases showing fasting hypertriglyceridaemia.

MATERIALS AND METHODS:

During the process of screening for lipid disorders, 224 cases with triglyceride levels more than 2.75 mmol/L were subjected to further investigations. These 220 men had mean age of 48.5 (0.65) years. Known cases with a history of diabetes, alcoholism, liver or renal diseases were excluded from the study. Blood samples obtained after 14 h fast were analysed for serum triglycerides and cholesterol. The sera with triglyceride levels of 2.75 mmol/L or more were subjected to the analyses of glucose and gamma-glutamyl transpeptidase activity (GGT). The coefficient of variation for all analytes between batches were less than 4.5%. When fasting blood glucose was equivocal (5.5 mmol-7.7 mmol/L) a 75g oral glucose tolerance test was performed after overnight fast of 14 h and a period of 3 days of unrestricted carbohydrate intake. Venous blood

samples collected in fluoride-oxalate tubes in the fasted state, at 60 and 120 min after the administration of 75g glucose were analysed. Interpretation of the OGTT was done using the criteria of World Health Organization[2].

RESULTS:

On the basis of fasting blood glucose levels the following subgroups were identified:

1. 135 subjects (61.3%) with a normal fasting blood glucose.
2. 66 subjects (30%) with an equivocal fasting glucose in whom a 75g OGTT was recommended.
3. 19 subjects (9%) with a fasting glucose level suggestive of diabetes. Diabetes was confirmed in these persons by finding at least one additional fasting serum glucose level > 7.8mmol/L or random glucose level > 11.1 mmol/L.

Of the 66 subjects with an initial equivocal fasting glucose, only 35 have undergone OGTT with the following observations: 15 subjects showed normal response; 11 showed impaired glucose tolerance; 9 showed a diabetic response.

55 subjects (25%) had elevated levels of GGT (> 60IU/L). Of these 35 had normal fasting glucose, 15 had an equivocal fasting glucose and 5 a diabetic fasting glucose. (Table 1)

Table 1
Serum Cholesterol, Glucose Gamma Glutamyl Transpeptidase levels in the patients studied

Cases	No	Triglyceride*	Cholesterol**	Glucose 3.5 – 5.5 mmol/L	GGT***
Total Cases	220	4.55 (0.15)	7.20 (0.10)	5.15 (0.15)	65 (5)
Normal fasting Glucose	135	4.50 (0.20)	7.15 (0.10)	4.65 (0.05)	55 (2)
Fasting Glucose (ambiguous)	66	5.00 (0.25)	7.25 (0.20)	6.20 (0.05)	90 (12)
Diabetes fasting glucose	19	4.30 (0.45)	7.05 (0.15)	11.5 (0.75)	82 (22)
GGT > 60IU/L	55	5.35 (0.35)	7.20 (0.20)	5.70 (0.55)	125 (10)
Diabetics	5	4.45 (0.40)	7.15 (0.35)	9.00 (0.35)	68 (12)
Impaired glucose	15	4.15 (0.20)	7.00 (0.35)	6.75 (0.45)	55 (10)

Values are mean (SEM); * Normal = 0.75 – 2.2 mmol/L; ** Desirable level < 5.5 mmol/L; *** Normal = 5-45 IU/L

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DISCUSSION:

Diabetes mellitus was detected in 10.5% of the cases studied. Impaired glucose tolerance was observed in 5.8% of the subjects with equivocal fasting glucose. This study further helps to bring out a clear association between carbohydrate intolerance and hypertriglyceridemia. In diabetics, hypertriglyceridemia appears to be a strong factor for the development of coronary artery disease.

It therefore, seems appropriate to detect diabetics with hypertriglyceridemia for the proper institution of treatment. In another attempt to screen alcoholics GGT estimation was carried out with a higher cut off value (GGT > 60IU/L). This is due to the effect of hypertriglyceridemia per se inducing an increase in GGT through induction [3]. In such a study it was observed that 25% percent had a higher GGT activity. Although relative insensitivity and non-specificity of the GGT for detection of alcohol abuse is well appreciated, elevated GGT levels were seen in 28.5% of uncomplicated cases of diabetes mellitus. The GGT levels rarely exceeded twice the

upper limit. Thus the present study indicates that screening for diabetes and alcoholism in hypertriglyceridemic cases is a fruitful approach. It also suggests that hypertriglyceridemia may be another maker for disturbed glucose tolerance either due to insulin deficiency or alcoholism [4, 5].

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