SERUM LIPIDS AND LIPOPROTEINS IN SCHIZOPHRENIC PATiENTS RECEIVING MAJOR TRANQUILIZERS

Pages with reference to book, From 259 To 261

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Abstract

Serum lipids and Jipoprotein levels were determined in 35 schizophrenics treated with Phenothiazine, 30 with butyrophenone and 22 with both drugs for six to twelve months. Total cholesterol, VLD L — cholesterol and LDL cholesterol levels were significantly elevated in patients on phenothiazine and LDL cholesterol in patients on butyrophenone. VLD L and LD L — cholesterol levels were significantly higher and HDL cholesterol levels lower in patients on combined therapy (JPMA 38 : 259 1988).

INTRODUCTION

Heavy doses of tranquilizers for prolonged periods are used for the treatment of Schizopbrema. Phenothiazines and Butyrophenones alone or in combination are known to affect serum lipid levels.[1-7] Except for occasional reports[8], data on -biochemical profile of Schizophrenics in Pakistan is scarce. This study reports serum lipids and lipoprotein levels in Sthizophrenics treated with major tranquilizers.

PATIENTS AND METHODS

Eighty seven male schizophrenics attending Psychiatric outpatient department of Bahawal Victoria Hospital were selected for this study. Their ages ranged from 30 . 50 years and they had been regularly receiving major tranquilizers for 6 — 12 months. Thirty five were on Chiorpromazine (300 — 500 mg/day), 30 on Haloperidol (10 — 30 mg/day) and 22 on a combined therapy. None had been taking other medications known to affect lipid levels. Patients with complications including diabetes mellitus and liver disease were excluded. Thirty male subjects of comparable age group and socioeconomic status, who were free from any physical or mental illness, served as controls.

Blood samples were drawn from all these cases after an overnight fast. The serum was separated and analysed for total lipids by sufophosphovanillin reaction[9], total cholesterol by Watson's[10], triacyiglycerol by the method of Giegel et al[11], HDL-cholesterol by Lopes- Virellatechnique[12] and LDL-cholesterol by Burstein and Samaille's method[13]. VLDL- cholesterol was calculated with the help of Wilson's formula[14]. Statistical differences between mean values of results were assessed by student's 't' test.

RESULTS

The age and weight were similar for the patient groups and controls (Table-I).

TABLE-I. General characteristics including number, Age, Wt. of Controls and Schizophrenic Patients treated with major Tranquilizers. Values represent Mean ±S.D.

Groups	n	Age (Years)	Wt. (Kg)	Period of Drug used (Months)
Controls	30	38±11	63±09	–
Phenothiazine	35	40±13	65±12	7±4
Butyrophenone	30	41±12	61±15	8±5
Mixed Therapy	22	39±07	64±19	10±6

There was a significant rise in mean total serum cholesterol concentrations ($P < 0.05$) in phenothiazine group (Table II). The mean total choIes~ terol concentrations in the patients on butyrophenone and on combined therapy, were also higher than in the controls, but the difference was not significant. There was non-significant difference in the levels of total lipids and triacyiglycerol in all patients as compared to that of control group (Table II).

TABLE – II. Serum Lipids (Mean ± S.D) in Controls and Schizophrenic Patients treated with Tranquilizers.

Groups	Total Lipids (mg/dl)	Total Cholesterol (mg/dl)	Triacyl-glycerol (mg/dl)
Controls	668.5±21.7	177.9±21.7	125.8±64.3
Phenothiazine	681.7±23.9	189.8±24.9*	132.9±51.4
Butyro-phenone	675.6±22.6	180.7±27.3	128.3±55.7
Mixed Therapy	683.8±23.8	181.5±34.1	133.2±53.5

The difference is statistically significant, * $P < 0.05$ as compared to control group.

There was a significant rise in VLDLcholesterol ($P < 0.05$) and LDL-cholesterol ($P<0.02$) in patients on phenothiazine but the reduction in HDL-cholesterol concentration was not significant (Table III)

TABLE –III. Cholesterol Fraction of Lipoproteins (Mean ± S.D) in Controls and Patients treated with Tranquilizers.

Groups	VLDL (mg/dl)	LDL (mg/dl)	HDL (mg/dl)
Controls	24.7±15.8	121.5±19.7	66.2±15.7
Phenothiazine	33.4±17.5*	137.3±31.7**	62.6±14.3
Butyro-phenone	31.7±16.3	135.9±29.5*	61.4±13.9
Mixed Therapy	37.1±19.2**	142.6±32.6***	57.5±12.6*

The difference is statistically significant, * $P<0.05$, ** $P<0.02$ and *** $P<0.01$ as compared to controls.

in group of patients TABLE-l. General characteristics including number, Age,Wt. of Controls and Schizophrenic Patients treated with major Tranquilizers. Values represent Mean S.D. on butyrophenone. Patients on combined therapy (phenothiazine and butyrophenone) had significantly higher levels of VLDL-cholesterol, ($P<0.02$), LDL-cholesterol ($P<0.01$) and signifIcantly lower levels of HDL-cholesterol ($P<0.05$) than the contrql group (Table III).

DISCUSSION

The mechanism by which major tranquilizers disturb lipid levels is not yet established. Chiorpromazine has a strong adrenergic blocking action and butyrophenones have also been reported to block the central effects of catechola mines[15].. The patients who receive B-blockers have a higher serum lipids, which partially result from increased free fatty acids release from the adipose tissue[16]. Our results indicate that there was significant increase in total cholesterol and VLDLcholesterol concentrations in the phenothiazine group which confinns the previous results[1]. Phenotbiazines in our study were also found to be associated with significant rise in LDL-cholesterol and non-significant fall in HDL-cholesterol values which were not in agreement with the latest study of Sasaki et ap who observed no significant difference in mean LDL-cholesterol and significant reduction in HDL.cholesterol as compared to controls. The significant elevation in the concentration of tricyiglycerol was demonstrated previously with the use of phenothiazines[3,7] which is not supported by our study. Total lipids were estimated but both the drugs did not affect thejr levels significantly.

Butyrophenones have been reported to lower serum total cholesterol[6] and HDL-cholesterol[7] significantly in men but in our patients, butyrophenone has not been shown to be associated with significant changes in total cholesterol, VLDLcholesterol, HDL-cholesterol and triacylglycerol. But

why butyrophenone only increased LDL-cholesterol fraction is not known.
In our study, the patients receiving mixed therapy, both a phenothiazine and butyrophenone had higher levels of VLDL-cholesterol, LDLcholesterol and lower levels of HDL-cholesterol. This may be due to prolonged period of therapy.

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