

# Assessment Of Correlation Between Lipid Profile, Criminal Behaviour And Psychosis

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## Abstract

**Background:** Social and cultural rearing environment has a powerful effect on behaviour, including violence. The present study was conducted to assess correlation between lipid profile, criminal behaviour and psychosis.

**Materials & Methods:** 100 subjects of both genders were divided into 4 groups of 25 each. Group I was general population. Group II was Psychotic inpatients with no H/o Crime. Group III was convicted criminal group and group IV was Psychotic Inpatient group with h/o crime. All were subjected to the GHQ-12 scale, Overt Aggression Scale (OAS), Brief Psychiatric Rating Scale (BPRS).

**Results:** Out of 120 subjects, males were 65 and females were 55. The mean cholesterol was 178.4, 174.2, 154.3 and 148.2, HDL was 33.6, 32.1, 32.7 and 34.9, TG was 170.2, 122.4, 137.5 and 112.3, LDL was 113.2, 118.5, 94.2 and 90.4 and VLDL was 34.2, 24.1, 27.6 and 22.1 in group I, II, III and IV respectively. The difference was significant ( $P < 0.05$ ).

**Conclusion:** There was an association of low cholesterol level with degree of violence/aggression.

**Keywords:** aggression, cholesterol, Violence.

## Introduction

Violence is defined as the number of violent incidents that had occurred over a specific period of time, ranging from 1 week to 39 to the entire life span. Violence was described as physical aggression against others but included threatening behaviors, a score of 2 or higher on the Overt Aggression Scale and 3 points on the Modified Overt Aggression Scale.<sup>1</sup>

Cholesterol is an unsaturated steroid alcohol, which is widely distributed through the human body and is especially abundant in cell membranes, the nervous system and liver.<sup>2</sup> Cholesterol is transported in the plasma and through the body in the form of lipoproteins, as cholesterol and other lipids themselves are insoluble. Lipoproteins are spherical particles

made up of hundreds of lipid and protein molecules. The major lipids of lipoproteins are cholesterol, triglycerides and phospholipids.<sup>3</sup>

Low levels of MAO activity were associated with impulsive aggression male (but not female) knockout mice deficient in the COMT gene exhibited aggressive behavior.<sup>4</sup> Hence, high noradrenergic activity and low activity of the enzymes are associated with aggressive behavior. The roles of dopaminergic mechanisms have not yet provided a generally accepted pattern of association with violence. Social and cultural rearing environment has a powerful effect on behavior, including violence.<sup>5</sup> The present study was conducted to assess correlation between lipid profile, criminal behavior and psychosis.

## Materials & Methods

The present study comprised of 100 subjects of both genders. All gave their written consent for the participation in the study.

Data such as name, age, gender etc. was recorded. They were divided into 4 groups of 25 each. Group I was general population. Group II was Psychotic inpatients with no H/o Crime.

Group III was convicted criminal group and group IV was Psychotic Inpatient group with h/o crime. All were subjected to the GHQ-12 scale, Overt Aggression Scale (OAS), Brief Psychiatric Rating Scale (BPRS). Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

## Results

**Table I Distribution of patients**

Total- 100		
Gender	Males	Females
Number	55	45

Table I shows that out of 100 subjects, males were 55 and females were 45.

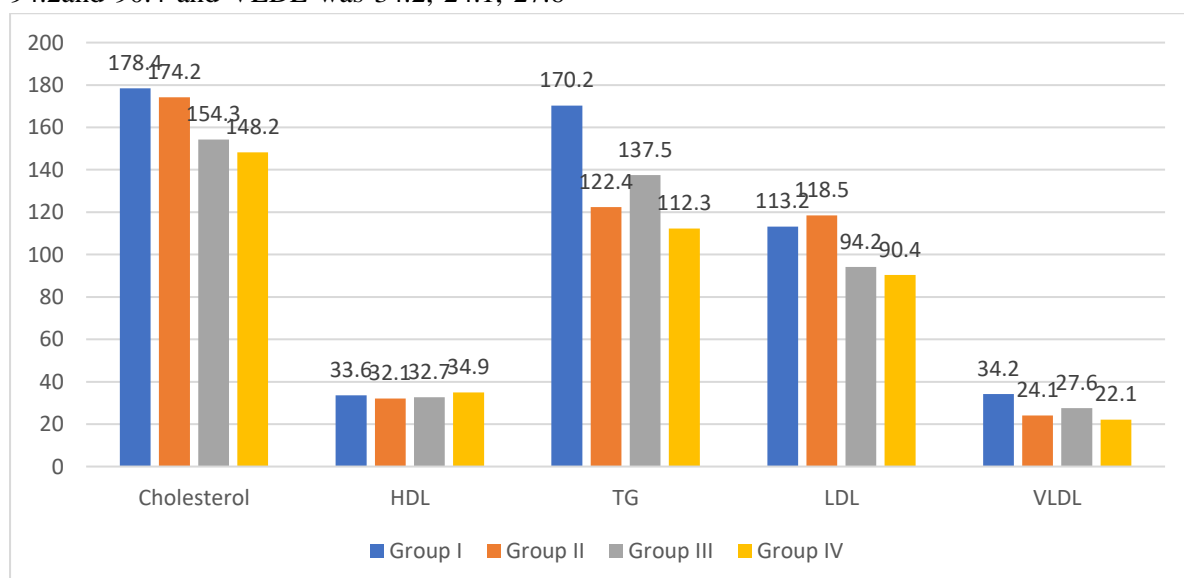
**Table II Comparison of lipid profile**

Lipid profile (mg/dl)	Group I	Group II	Group III	Group IV	P value
Cholesterol	178.4	174.2	154.3	148.2	0.05
HDL	33.6	32.1	32.7	34.9	0.21
TG	170.2	122.4	137.5	112.3	0.04
LDL	113.2	118.5	94.2	90.4	0.04
VLDL	34.2	24.1	27.6	22.1	0.05

Table II, graph I shows that mean cholesterol was 178.4, 174.2, 154.3 and 148.2, HDL was 33.6, 32.1, 32.7 and 34.9, TG was 170.2, 122.4, 137.5 and 112.3, LDL was 113.2, 118.5, 94.2 and 90.4 and VLDL was 34.2, 24.1, 27.6

and 22.1 in group I, II, III and IV respectively. The difference was significant (P < 0.05).

**Graph I Comparison of lipid profile**



## Discussion

Violent behaviour is heterogeneous; that is, impulsive and premeditated violent acts differ

in their origins, mechanisms, and management.<sup>6,7</sup> Recent molecular genetic studies of neurotransmitter regulation are providing new insights into patho-physiology of violent behaviour. Serotonin synthesis and activity regulation are under genetic control.<sup>8,9</sup> Catabolism of catecholamine occurred by enzymes monoamine oxidase (MAO) and catechol-O-methyl transferase (COMT). Genes for both types are located at the X chromosome. Low MAO activity was found in the platelets of violent offenders. Males had a point mutation in the MAO-A structural gene.<sup>10,11</sup> The present study was conducted to assess correlation between lipid profile, criminal behavior and psychosis.

We found that out of 100 subjects, males were 55 and females were 45. Das et al<sup>12</sup> involved 120 participants consisted of four groups. Each group consisted of 30 subjects. This study was done in two different places. One is at Circle jail Choudwar, Cuttack and second place is at in-patient Department of Psychiatry MHI, S.C.B medical college, Cuttack. First study group was male convicted prisoners selected at Circle Jail Choudwar having no psychiatric illness. The control group for this was selected from general population. The second study group was male psychotic patients having criminal record. The control group for this was selected from same ward, of male psychotic patient having no criminal record. The objective was to study the serum lipid profile of each group and its relationship in criminality, psychosis and aggression. All the subjects in first study group and its controls were screened with General Health Questionnaire (GHQ-12). All subjects in second study group and its controls were assessed with Overt Aggression Scale (OAS) for scoring of aggression and Brief Psychiatry Rating Scale (BPRS). The criminal group without psychiatric illness showed significantly lower cholesterol ( $p=0.010$ ) than general population and also lower than the psychotic in-patients without history of crime. The psychotic in-patient group with criminal records showed significantly lower cholesterol ( $p=0.001$ ) than psychotic patients of no criminal record and

also lower than non-psychotic criminal offenders. The psychotic criminal offenders showed lowest mean cholesterol than all other three groups.

We found that the mean cholesterol was 178.4, 174.2, 154.3 and 148.2, HDL was 33.6, 32.1, 32.7 and 34.9, TG was 170.2, 122.4, 137.5 and 112.3, LDL was 113.2, 118.5, 94.2 and 90.4 and VLDL was 34.2, 24.1, 27.6 and 22.1 in group I, II, III and IV respectively. Chakrabarty et al<sup>13</sup> compared the serum lipid profile and serum apolipoproteins A1 and B of men with a violent criminal record and men with no criminal history. Fasting blood samples were collected from 30 men with a known history of violent crime and 30 men with no criminal record. Serum lipid profile and serum apolipoproteins A1 and B were measured in each sample, and compared between the two groups. The group with the violent criminal record showed significantly lower total cholesterol, lower LDL cholesterol, higher apolipoprotein A1 and lower apolipoprotein B compared with the control group. Lower total cholesterol, lower LDL cholesterol, higher apolipoprotein A1 and lower apolipoprotein B could predispose to violence. Edgar et al<sup>14</sup> studied serum lipid profile and apo-lipoprotein A1 and B of 30 male psychotic patient with violent criminal record. The LDL cholesterol is one of the main forms of transport of cholesterol from the liver to extra-hepatic tissues, while HDL cholesterol is the main form of transport of cholesterol from extra-hepatic tissues to liver.

The limitation the study is small sample size.

### Conclusion

Authors found that there was an association of low cholesterol level with degree of violence/aggression.

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