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EVALUATION OF SERUM CRP AND LIPID PROFILE IN DEPRESSIVE PATIENTS

Biochemistry

Dr. Sharmila Kumari Department of Biochemistry Sardar Patel Medical College Bikaner (Raj.)

Dr. Neha Sharma Department of Biochemistry Dr. S.N. Medical College, Jodhpur (Raj.)

Dr. Mamta Choudhary* Department of Biochemistry Sardar Patel Medical College Bikaner (Raj.) *Corresponding Author

ABSTRACT

Background: Depression is a psychiatric disorder, related to a feeling of sadness and loss of interest that affects how one feels, thinks, as well as behaves, and can lead to a variety of emotional and physical problems[1]. Symptoms of depression include depressed mood, loss of interest or pleasure, diminished concentration, feelings of guilt and unworthiness, disturbed sleep, changes in appetite, thoughts of suicide, and impairment of daily functioning[2,3].

Methods: The Present study was conducted in Department of Biochemistry in association with Department of Psychiatry, Sardar Patel Medical College and attached Hospital, Bikaner. There were 50 cases and 50 controls in the age groups from 25-65years. We took fresh samples and performed required tests following standard protocol.

Results: The Mean±SD of Serum CRP (2.52±0.55 mg/dl), TG (220±26.72 mg/dl) and VLDL (44±5.34 mg/dl) Levels were significantly increased and TC (141.4±5.96 mg/dl), HDL-cholesterol (32.46±3.95 mg/dl), LDL-cholesterol (69.73±10.04 mg/dl) levels were significantly decreased in patients of depression.

Conclusion: In this study serum CRP level was raised in newly diagnosed depressive patients indicates that there may be some correlation with inflammatory mechanism in depression. Abnormal lipid profile results shows some alteration in brain chemistry or brain function cause improper function of brain leading to mental disorder. This study may help to understand the pathophysiology and metabolic derangement in lipid profile in depression.

KEYWORDS

CRP, Lipid profile, depression

INTRODUCTION

Major depressive disorder is a prevalent psychiatric disorder, predicted the second leading cause of disability by 2020[4,5]. In the UK, the prevalence of a single lifetime episode of major depression is 6.4%[6]. According to the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV), the main symptoms that define the diagnostic criteria for MDD are low mood, anhedonia and anergia, lasting for a period of at least two weeks[7].The presence of these symptoms severely impairs daily functionality and contributes to loss of productivity[8,9]. MDD is associated with a variable prognosis and chronic course; the median duration of an episode is reported to be 23 weeks, with 25% of individuals proceeding to suffer further episodes in their lifetime[10]. Persistent and pervasive low mood leaves sufferers with a significantly impaired quality of life. According to our best knowledge this type of study conducted first time in western Rajasthan, india. According to socioeconomic and demographic area there is a scarcity of data related to CRP and lipid profile in depressive patients in Rajasthan. This would help to understand the pathophysiology of depression and to plan better intervention as well as management.

MATERIALS AND METHODS

The present study was conducted in Department of Biochemistry in association with Department of Psychiatry of Sardar Patel Medical College and attached Hospital, Bikaner for the necessary tests and investigations. The depressive patients were classified clinically by psychiatrist according to DSM-IV criteria which were registered to the P.B.M Hospital satisfying both the inclusion and exclusion criteria were selected for this study. The control group was taken from patient's attendants, staff, and students and from personal request. It was an observational cross sectional study which was conducted period between June 2016-feb 2017 on age and sex matched 100 subjects and divided in two groups as follow:

Group 1- Control (Normal Healthy Subjects) (n=50)
Group 2- Newly diagnosed Depressive patients (n=50)

Exclusion criteria for controls and Patients include the presence of organic diseases such as hypertension, diabetes, cardiovascular, hepatic and thyroid disorder documented by physical and chemical examination. Pregnant, menopausal women and persons taking treatment of depression were excluded. After explanation of the study, informed consent was obtained from all participants before the study.

5ml blood of depressive patients and control group was drawn in a perfectly clean dry syringe preferably disposable and then transferred to clean dry centrifuge tube allowed to clot at room temperature for 30 minutes. Then blood has to precautionaly centrifuged. The serum was separated by centrifuge at 3000 revolution per minutes (rpm) for 10 minutes. Samples with sign of hemolysis were discarded. Serum CRP level were estimated using antigen-antibody latex agglutination method and TG, TC, HDL-cholesterol and LDL-cholesterol were assessed by colorimetric method using commercially available reagents and kits by semi auto analyzer and VLDL-cholesterol calculated by friedewald (1972) formula.

STATISTICAL ANALYSIS

Data was entered on MS office 2007 excel worksheet in the form of master chart. This data was classified and analyzed as per aims and objectives. Quantitative data expressed in the form of Mean±SD. Inference drawn with the use of appropriate test of significance. The level of significance was determined by employing pooled t-test and Pearson's correlation coefficient. Only when p- value was less than 0.05 was the difference between two groups considered as statistically significant.

RESULTS

The present study was conducted on 100 subjects aged between 25-65 years of both sex comprising 50 normal healthy persons represented as control group and 50 depressive patients represented as study group. There was no significant difference in age, sex, food habits, socioeconomic status and area of living they live between the patients and control subject. The Mean±SD of Serum CRP (2.52±0.55 mg/dl), TG (220±26.72 mg/dl) and VLDL (44±5.34 mg/dl) Levels were significantly increased and TC (141.4±5.96 mg/dl), HDL-cholesterol (32.46±3.95 mg/dl), LDL-cholesterol (69.73±10.04 mg/dl) levels were significantly decreased in patients of depression.

Table

Parameters	Mean + SD		P- value	Significance
	Control	Depressive patient		
CRP(mg%)	0.826±0.14	2.52±0.55	<0.0001	S
TG(mg%)	128±20.57	220±26.72	<0.0001	S

TC(mg%)	187±13.42	141.4±5.96	<0.0001	S
HDL-Cholesterol (mg%)	48.4±12.33	32.46±3.95	<0.0001	S
LDL-Cholesterol (mg%)	113±17.45	69.73±10.04	<0.0001	S
VLDL-Cholesterol (mg%)	25.6±4.11	44±5.34	<0.0001	S

DISCUSSION

The main findings of the present study were higher levels of serum CRP, TG and VLDL and low level of TC, HDL-cholesterol and LDL-cholesterol in depressive patients than in healthy controls and provide new insight into the role of CRP and lipid profiles in depression pathophysiology. The mean serum CRP was increased to 2.52±0.55 mg/dl in depressive patients. Results obtained in our study are accordance to results obtained by Yunsheng Ma (2011)[11], William E. (2011)[12], James White (2016)[13]. It might be possible that due to chronic inflammation damage the micro-vascular system of brain hamper cerebral blood flow. This leads an increase of stress hormone like nor epinephrine may activate the inflammatory arm of the immune system and trigger the expression of genes that cause chronic, low grade inflammation. Thus, CRP might be raised in depression.

Mean serum triglyceride concentration was increased to 220±26.72 mg/dl, and mean serum VLDL cholesterol concentration was 44±5.34mg/dl. Mean serum total cholesterol concentration was decreased to 141.4±5.96 mg/dl, mean serum HDL cholesterol concentration was 32.46±3.95 mg/dl, LDL cholesterol concentration was 69.73±10.04 mg/dl in depressive patients. Results obtained in our study accordance to results obtained by Hamidreza Roohafza(2005)[14], Maja Vilibic(2014)[15], Lalitha Devi Dhulipala(2016)[16].

The proposed molecular mechanism for the relationship between serum cholesterol levels and depression is via effects on the serotonin (5-HT) system. Low cholesterol content in cell membranes is associated with decreased density of 5-HT receptors measured reduced total cholesterol level in the medial prefrontal cortex, This suggests that cholesterol, particularly in the prefrontal cortex, influences the sensitivity of the 5-HT1A receptor in the pathology and treatment of depression.

CONCLUSION

A statistically significant increased in serum CRP,TG and VLDL and decreased in serum TC, HDL-cholesterol and LDL-cholesterol in depressive patients was recorded as compared to that of control groups.

This is a regional study of western rajasthan having different cultural, social, food habits, demographic, environmental criteria than other regions of india, small sample size and it was a cross sectional study with short duration study, need further evaluation of correlation between CRP and lipid profile in depressive patients.

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