Memory Dysfunction and Interleukin 6 (IL-6) in Patients with Bipolar Disorder during euthymic periods

Thesis
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SUMMARY

This work is a case control study that aimed at comparing the serum interleukin-6 levels in patients with bipolar disorder to those of healthy controls .Its aim was also to study the relation between serum interleukin-6 level in patients with bipolar disorder and their clinical parameters. Another aim of this study was to compare patients with bipolar disorder and healthy controls as regards memory functions in the domains of information and orientation, mental control, figural memory, visual memory span, digit span, visual paired association, visual reproduction and verbal paired association and also to study the relation between serum levels of interleukin-6 and their performance in these memory domains.

This study consisted of two parts: theoretical background and practical part

A. Theoretical background:

Chapter 1:Bipolar disorder

In this chapter, an overview bipolar disorder was given, including epidemiology and etiology including biological factors (heritability, structural brain imaging, functional brain imaging, neurochemistry neuroendocrinology) and psychosocial factors followed by diagnosis of bipolar disorder, delays of diagnosis of bipolar disorder, diagnostics errors, switching from unipolar to bipolar disorder, illness coarse, illness progression, identifying at-risk individuals and co-morbidity of bipolar disorder.

Chapter 2: Memory functioning in Bipolar Disorder

In this chapter memory functioning in bipolar bisorder was discussed including intrudction, neurophysiology of memory and types of memory including short term memory and its neural basis, working memory and neural basis and long term memory and its neural basis followed by bipolar disorder and memory, therapeutic interventions of memory and Psychosocial approaches.

Chapter 3: Interleukin-6 and its Role in Bipolar Disorder

This chapter started by an introduction on interleukin-6 and its structure, as well as its role as a proinflammatory cytokine. Then, the role of IL-6 in the bipolar disorder, and Finally, immune-modulation–based treatment options for bipolar disorder including anti-inflammatory treatment strategies and their possible role in prevention were discussed.

B-Practical part

Participants included in this study were 40 patients with bipolar disorder diagnosed according to the DSM-5 criteria, who were recruited from Psychiatry Outpatient Clinic, Fayoum University as well as 40 healthy controls matched in age, gender and educational levels to the patients group who were volunteers from paramedical staff of Fayoum University Hospital.

Inclusion criteria:

- Both male and female will be included.

- Participants will meet DSM- IV criteria for bipolar disorder.

- Participants are in the range from 18 to 50 years old.

Exclusion criteria:

- Other psychiatric disorders.

- Fulfilling criteria of drug dependence or abuse.

- History of mental retardation.

- History of any clinical disorder which affect memory (including Epilepsy and seizures, encephalitis, trauma to the skull or any central nervous system disorders).

- History of any autoimmune disorders.
- ECT administration in the past 6 months before assessment.

Methods:

All patients will be evaluated by physical examination, Psychiatric examination by using the semi-structured interview derived from the psychiatric sheet of Fayoum Psychiatry Department, Relevant data include (sociodemographic data, age at illness onset, past H/O of previous episodes, duration of illness, family history and number of hospitalizations) , Structured Clinical Interview based on DSM-IV (SCID-I) ,Young Mania Rating Scale (YMRS) and Hamilton Depression Rating Scale (HAMD).

Then both of Patients group and Control group will be evaluated for the memory functions by Wechsler Memory Scale and measurement of Interleukin 6 (IL-6) level.

Results:

I-Descriptive results:

- In the patients' group the mean age was 28.1 years and that of the healthy control group was 28.3 years.
- There was no statistically significant difference between both groups as regards sex.
- There was no statistically significant difference between both groups as regards educational level.
- The percentage of those who had positive family history of the patient's group was 30%.
- The percentage of those who had positive history of hospitalization was 32.5% versus 67.5% for negative history.
- The mean age at illness onset in the bipolar disorder group was (24.5±5.5) ranged between 16 and 38 years and the mean duration of illness was (3.8±3.8) ranged between 1 and 15 years.
- The mean number of previous episodes in the bipolar disorder group was (1.1±1.5) ranged between 1 and 7 episodes.

II-Comparison between the bipolar disorder during euthymia group and the healthy control group
- In the bipolar disorder group, the mean serum IL-6 level (37.1pg/ml) was higher than the mean serum IL-6 level in the healthy control group (26.6pg/ml) with a statistically significant difference.
- The bipolar disorder group showed a poorer performance than controls in logical memory and verbal paired association memory (easy and hard) with a statistically significant difference with no statistically significant with other types of memory.

III-Correlations and comparisons in the schizophrenia group:
- No statistically significant correlation between IL6 level and different sex, age of disease onset and different family history among cases.
- A statistically significant positive correlation between IL6 and positive family history, age, duration of illness and number of previous attacks .
- There was a statistically significant negative correlation between IL6 and education level in patients with bipolar disorder.
- There is a significant negative correlation between serum IL-6 level and information and orientation, mental control, figural memory, visual paired association, visual memory span, digit span and verbal memory in patients with bipolar disorder.

- No statistically significant correlation was found between serum IL-6 level and logical memory and visual reproduction memory in patients with bipolar disorder.

Conclusions:

- Serum IL-6 in patients with bipolar disorder during euthymia is higher than that of healthy controls reflecting a possible underlying immune pathophysiology of the illness

- Patients with bipolar disorder during euthymia show memory deficits in the domains of logical memory and verbal paired association memory.

- There is a significant negative correlation between serum IL-6 level and verbal paired association memory score in patients with bipolar disorder.