

Cytokine profiles in bipolar affective disorder during acute episodes and in remission



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Neuroimmunology of Bipolar Disorder

- The changes in immunological system in bipolar illness have been investigated significantly less frequently compared to those occurring in major depression.
- The impact of mood state on the function of the immune system of bipolar patients is controversial.

Neuroimmunology of Bipolar Disorder

- It has been demonstrated that the disturbances of this system regulation in bipolar illness may have features of either decrease or pathological increase, with dominant augmented activity of pro-inflammatory cytokines.
- In many instances, the changes of immunological system during manic episode may be similar to those observed during depression [1,2].

Purpose of the study

- The aim of the study was to examine the cytokine status in patients with bipolar mood disorder during episodes of mania and depression and in remission period.
- The values of cytokines have been also compared with matched healthy controls.

Patients

- The study was performed on 71 patients with bipolar mood disorder, 23 male, 48 female, aged 18-72 (mean 40) years.
- They all met the DSM-IV and ICD-10 criteria for bipolar disorder.
- They were hospitalized at Department of Adult Psychiatry, University of Medical Sciences in Poznan, Poland.

Healthy controls

- The group of 79 control subjects, 36 male, 43 female, aged 21-63 (mean 35) years,
- without any history of psychiatric or immunological illness,
- recruited via newspaper and internet announcement.

Measures

- Interleukin (IL) 1 β
- IL -2
- IL-4
- IL-6
- IL-10
- Tumor necrosis factor (TNF) α
- Interferon γ
- For cytokine measurements, following an overnight fast, blood samples were drawn from the subjects' antecubital veins.
- Serum samples were tested using the Human Th1/Th2 Cytometric Bead Array method (Biosciences Pharmingen, USA).

Methods

- The cytokine status of the patients was assessed :
 - in 33 persons during acute manic episode and in 29 of them also in remission
 - in 38 patients with acute depression and 35 of them in remission.

Methods

- The intensity of mania at the day of cytokine assessment was estimated by the Young Mania Rating Scale (YMRS). The range of the intensity of manic symptoms as assessed by YMRS was 17-44 points.
- The intensity of depression was assessed by Hamilton Depression Rating Scale (HDRS). The range of intensity of depressive symptoms was 11-31 points.

Results IL-6

- Concentrations of IL-6 were higher during manic state compared to control subjects ($p < 0.08$, Mann-Whitney test) and showed a decrease with clinical improvement, but they still remained higher than in healthy controls.
- Concentrations of IL-6 during manic state correlated significantly with the intensity of mania as assessed by YMRS.

Results IFN- γ , IL-10

- The concentrations of IFN- γ were higher during depression and also during remission comparing to control subjects (Mann-Whitney test).
- Concentrations of IL-10 were higher in manic patients during remission than in control subjects ($p < 0.02$, Mann-Whitney test).

Conclusions

- The results obtained in this study may corroborate that of recent research showing an increase of pro-inflammatory cytokines (IL-6, IFN- γ) during acute episodes of bipolar affective disorder and their following decrease toward remission.
- A correlation between IL-6 concentration and the intensity of manic state may suggest that this cytokine can be regarded as a state-dependent biological marker for an acute phase of bipolar affective illness.

References and disclosure

- O'Brien, S.M., Scully, P., Scott, L.V. Cytokine profiles in bipolar affective disorder: focus on acutely ill patients. 2006 J. Affect. Disord., 90: 263-267.
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