**Purpose of Study**

Dysfunctional immune responses may contribute to underlying mechanisms of psychiatric diseases [1-5]. However, previous results are often based on a psychiatric group compared to healthy control group(s). It is still unclear whether a pattern of deviation in immune responses similarly shared among psychiatric disorders or specific to certain diagnoses.

**Objectives:** We examined ① cytokines and high-sensitivity CRP (hsCRP) deviations in different psychiatric diseases by comparing a psychiatric group to other psychiatric (control) groups. Similarly, ② an association between a risk of having a particular psychiatric disorder and the set of immunobiomarkers was also assessed.

**Method**

**Setting:** This is a cross-sectional, single-center study. Data was collected from Department of Psychiatry, St. Olav’s University Hospital between October 19, 2004, and November 11, 2006. In total, 585 of 832 patients gave consent (response rate: 70.3 %).

**Laboratory Assay:** Blood samples were drawn from patients within 24 hours after admission. Peripheral blood was analyzed for the following cytokines: IL-4, IL-6, IL-10 and TNFα; and hsCRP.

**Diagnosis:** Primary psychiatric diagnosis were categorized into 8 groups according to ICD-10; substance abuse disorders (SUD), schizophrenia, bipolar mania, bipolar depression, unipolar depression, neurotic disorders, personality disorders and all other diagnoses as ‘others’.

**Statistics:** ① To compare difference in levels of immune biomarkers across psychiatric diagnostic groups

- **The Kruskal-Wallis H-test** was conducted.
  - Post hoc analysis was used if the test showed significance between groups by using the Dunn-Bonferroni approach.

② To assess an association of predictive effects of the set of cytokines on a specific diagnostic group

- **Binary Logistic Regression** was conducted.
  - Independent variables = immune biomarkers
  - Dependent variable = a psychiatric diagnosis (yes/no)

**Result and Discussion**

**Research Question ①**

We found: There was a statistically significant difference only in hsCRP levels across the eight diagnostic groups, $\chi^2(7) = 21.752, p < .05$.

- SUD recorded a higher mean score than the other groups (mean score = 3.04).

The Dunn-Bonferroni approach showed that there were significant differences between neurotic disorders and schizophrenia ($Z = 3.286, p = 0.028$), and between neurotic disorders and SUD ($Z = -3.617, p = 0.008$).

- In both cases, neurotic disorders scored lower compared with schizophrenia or SUD.

**Discussion:** hsCRP levels were significantly different across the 8 psychiatric disorders.
- Higher levels of hsCRP in SUD may be affected by presence of substance abuse and their lifestyle.
- Deviations in levels of hsCRP in schizophrenia and neurotic disorders may be a response to the secondary effects of the underlying systematic mechanisms of psychiatric disorders

**Research Question ②**

We found: The logistic models of unipolar depression showed statistical significance ($p < .05$).
- hsCRP reached significance using Wald $\chi^2$ statistical test (Wald $\chi^2 = 4.166, p = .41$, Odd Ratio = 4.166, 95% CI = 0.92 - 0.998).
  - hsCRP was a significant predictor in this model, which explains the odds of having a diagnosis of unipolar depression decreases by a factor .958 for a unit increase in hsCRP.

**Discussion:** This study indicates that mechanisms raising the level of hsCRP might be more active in unipolar depression as opposed to other psychiatric diagnoses.

**Conclusion**

Our study shows that in analyzing immuno-biomarkers, comparing groups of psychiatric disorders is important.

- Further studies including comparison with healthy controls are necessary to explore whether this immune profile is only shared among psychiatric patients.


There is no potential conflict of interest.