Abstract 6

Do Systemic Inflammation and Blood-Brain Barrier Failure Play a Role in Pediatric Psychosis?

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Context: Blood-brain barrier (BBB) failure occurring downstream of inflammatory processes plays a role in seizure disorders and other neurological diseases. Human and animal studies have suggested an underlying inflammatory mechanism for a variety of neurological disorders, including schizophrenia. To date, all available reports focused on adult patients with chronic schizophrenia. No studies have evaluated a possible link between inflammation, the BBB, and psychotic events in children or adolescents.

Objective: We wished to test the hypothesis that first-episode psychosis, a prodromic event often leading to chronic schizophrenia, is associated with inflammation and BBB leakage.

Patients: We studied patients admitted to a pediatric inpatient psychiatric unit. Patients (n = 86) had new-onset psychosis diagnosed using DSM-IV TR criteria for Psychosis NOS, schizophreniform disorder, or schizoaffective disorder. Patients were matched for age, race, and gender with nonpsychotic inpatient controls within the same unit (n = 86). We also compared these values to normal control ranges. An additional 10 psychotic patients and as many normal controls were used for cytokine and S100β serum level analysis.

Main Outcome Measures: In this study, we measured cellular and serum markers of systemic inflammation and BBB leakage.

Results: White blood cell values revealed a significant increase in absolute monocytes (0.62 ± 0.29; $P < .01$) and lymphocytes (2.51 ± 0.8; $P < .05$) in psychotic patients compared to nonpsychotic controls (0.47 ± 0.16 and 2.21 ± 0.69, respectively). All other hematologic values were similar between the groups. In addition, psychosis was characterized by increased serum levels of S100β, a peripheral marker of BBB damage. Several inflammatory mediators (eg, TNF-α, IL1-β, IL-6) were elevated in psychotic children.

Conclusions: These results strongly support a link between systemic inflammation, subsequent BBB failure, and first-episode psychosis in pediatric patients.