J Clin Psychiatry. 2009 Aug;70(8):1078-90. doi: 10.4088/JCP.08r04505. Epub 2009 Jun 2.

Inflammation and the phenomenology, pathophysiology, comorbidity, and treatment of bipolar disorder: a systematic review of the literature.

Goldstein BI[1], Kemp DE, Soczynska JK, McIntyre RS.

Author information

[1]Western Psychiatric Institute and Clinic, University of Pittsburgh School of Medicine, 3811 O'Hara Street, Pittsburgh, PA 16213, USA. goldsteinbi@upmc.edu

Abstract

OBJECTIVE: To review extant literature implicating inflammation in the pathophysiology of bipolar disorder. Furthermore, we review evidence regarding the anti-inflammatory actions of mood-stabilizing medication, the putative reciprocal association of inflammation with behavioral parameters and medical burden in bipolar disorder, and the potential role of anti-inflammatory agents in the treatment of bipolar disorder.

DATA SOURCES: MEDLINE and PubMed searches were conducted of English-language articles published from 1950 to April 2008 using the search terms bipolar disorder, manic, or mania, cross-referenced with inflammation, inflammatory, interleukin, cytokine, C-reactive protein, or tumor necrosis factor. The search, which was conducted most recently on August 20, 2008, was supplemented by manually reviewing reference lists from the identified publications.

STUDY SELECTION: Articles selected for review were based on adequacy of sample size, the use of standardized experimental procedures, validated assessment measures, and overall manuscript quality.

DATA EXTRACTION: Studies were reviewed for statistical comparisons of cytokines among persons with and without bipolar disorder, during symptomatic and non-symptomatic intervals and before and after pharmacologic treatment. Significant and nonsignificant findings were tabulated.

DATA SYNTHESIS: Available evidence indicates that bipolar disorder and inflammation are linked through shared genetic polymorphisms and gene expression as well as altered cytokine levels during symptomatic (i.e., mania and depression) and asymptomatic intervals. However, results are inconsistent. Several conventional mood stabilizers have anti-inflammatory properties. The cyclooxygenase-2-selective anti-inflammatory celecoxib may offer antidepressant effects. Inflammation is closely linked with behavioral parameters such as exercise, sleep, alcohol abuse, and smoking, as well as with medical comorbidities including coronary artery disease, obesity and insulin resistance, osteoporosis, and pain. Methodological limitations precluding definitive conclusions are heterogeneity in sample composition, cytokine assessment procedures, and treatment regimens. The inclusion of multiple ethnic groups introduces another source of variability but also increases the generalizability of study findings.

CONCLUSION: Inflammation appears relevant to bipolar disorder across several important domains. Further research is warranted to parse the reciprocal associations between inflammation and symptoms, comorbidities, and treatments in bipolar disorder. Studies of this topic among youth are needed and may best serve this purpose.

PMID: 19497250 [PubMed - indexed for MEDLINE]