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Pro-inflammatory cytokines and depression in patients with acute leukemia

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The prevalence of depression among patients diagnosed with cancer is higher than general population and is associated with faster tumor progression and shorter survival time. Cytokines whose primary function is to act as signaling molecules of the immune system have recently also been implicated in the pathogenesis of depression. The aim of present study was to investigate the relation between pro-infammatory cytokines [Interleukin-6 (IL-6) and Tumor Necrosis Factor-alpha (TNF-alpha)], depression and stressful life events in patients with acute leukemia. Twenty eight patients (18 males and 10 females) suffering from acute leukemia participated in this study. Their mean age was 33.3 +/- 12.1 years. They were subjected to psychiatric assessment using The Beck Depression Inventory (BDI), Holmes and Rahe Social Readjustment Scale, The Perceived Stress Scale (PSS) and The Brief Fatigue Inventory (BFI). Measurement of IL-6 and TNF-a genes expression in peripheral blood mononuclear cells was done using real-time PCR. Results revealed statistically significant elevation in the level of IL-6 gene expression, fatigue and perceived stress among depressed patients compared to none depressed group. The same results were obtained when comparing patients exposed to moderate or severe stressful life events compared to those exposed to none or mild stressful life events. Although, TNF-a gene expression was not associated with depression or stressful life events, it was associated with acute myeloblastic leukemia (AML). IL-6 gene expression was much higher among patients with AML than acute lymphoblastic leukemia (ALL), but the difference did not reach statistical significance. These findings support the hypothesis that IL-6 might be involved in the etiology and symptomatology of depression in cancer patients. The development of biologic therapies targeting IL-6 may raise the possibility of simultaneously countering the severe effects of depression.