



Stressed to death: implication of lymphocyte apoptosis for psychoneuroimmunology.

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Psychological and physical stressors best exemplify the intercommunication of the immune and the nervous systems. It has been shown that stress significantly impacts leukocyte cellularity and immune responses and alters susceptibility to various diseases. While acute stress has been shown to enhance immune responses, chronic stress often leads to immunosuppression. Among many criteria examined upon exposure to chronic stress, the reduction in lymphocyte mitogenic response and lymphocyte cellularity are commonly assessed. We have reported that chronic restraint stress could induce lymphocyte reduction, an effect dependent on endogenous opioids. Interestingly, the effect of endogenous opioids was found to be exerted through increasing the expression of a cell death receptor, Fas, and an increased sensitivity of lymphocytes to apoptosis. Stress-induced lymphocyte reduction was not affected by adrenalectomy. In this review, based on available literature and our recent data, we will discuss the role of the hypothalamic-pituitary-adrenal axis and endogenous opioids and examine the mechanisms by which chronic stress modulates lymphocyte apoptosis.

Brain Behav Immun 2003 Feb; 17 Suppl 1:S18-26

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