

ERRATUM

Estrogen: A Novel Therapeutic Adjunct for the Treatment of Trauma-Hemorrhage-Induced Immunological Alterations

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The abstract for this article (14[3-4]: 213-221, March-April 2008) included an incorrect statement. The original sentence appeared as: "Studies have also shown that the survival rate and the induction of subsequent sepsis following trauma-hemorrhage are significantly higher in males and ovariectomized females compared with proestrus females."

Trauma-hemorrhage leads to prolonged immune suppression, sepsis, and multiple organ failure. The condition affects all compartments of the immune system, and extensive studies have been carried out elucidating the immunological events following trauma-hemorrhage. The immune alteration observed following trauma-hemorrhage is gender dependent in both animal models and humans, though some studies in humans are contradictory. Within 30 min after trauma-hemorrhage, splenic and peritoneal macrophages, as well as T-cell function, are depressed in male animals, but not in proestrus females. Studies have also shown that the mortality rate and the induction of subsequent sepsis following trauma-hemorrhage are significantly higher in males and ovariectomized females compared to proestrus females. These and other investigations show that sex hormones form the basis of this gender dichotomy, and administration of estrogen can ameliorate the immune depression and increase the survival rate after trauma-hemorrhage. This review specifically elaborates the studies carried out thus far demonstrating immunological alteration after trauma-hemorrhage and its modulation by estrogen. Also, estrogen was shown to produce its salutary effects through nuclear as well as extranuclear receptors. Estrogen rapidly activates several protein kinases and phosphatases, as well as the release of calcium in different cell types. The results of the studies exemplify the promise of estrogen as a therapeutic adjunct in treating adverse pathophysiological conditions following trauma-hemorrhage.