Topic: Neurosciences

Neurohypophysial Secretion Alterations in Sepsis Survivor Animals Challenged with Immune Stimulus

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Introduction: Previous work in our laboratory showed that inflammatory mediators released during sepsis contribute to the impairment of vasopressin and oxytocin secretion that persist in survivors challenged with osmotic stimulus. However, it is unclear whether these changes persist when the animals are submitted to immune stimulus.

Objective: To study the neuroendocrine alterations in sepsis survivor animals following immune challenge with LPS. Sepsis was induced by the cecal ligation and perforation (CLP) method and the animals (perforated once with a 14G needle) were observed for five or ten days. Naive or sepsis survivors were submitted to intravenous injection of LPS (1.5 mg/kg). After 60 minutes the animals were decapitated for collection of blood and the hypothalamus. Blood was collected for the determination of nitrate, cytokines and hormones (vasopressin, oxytocin) and the hypothalamus for cytokine, synaptophysin and beta-amyloid contents analyses.

Material and Methods: Following the immune challenge, we observed a peripheral increase of nitrate, IL-1 and IL-6 in both group naïve and survivor with an attenuated response in the 10 days survivor. An hypothalamic IL-1 increase was seen in the naïve and survivors, however no such change was seen for IL-6. An exacerbated secretion of vasopressin and oxytocin was observed in either 5 or 10 days survivors animals submitted to the immune stimulus. We also found a decrease in the hypothalamic content of synaptophysin, and no signal of beta amyloid accumulation in the survivors before or after the LPS injection.

Conclusions: We conclude that alterations in vasopressin and oxytocin secretion may be associated with sustained neuroinflammation and synaptic dysfunction. This model of sepsis may provide important information for understanding neuroendocrine alterations in the disease.

Keywords: vasopressin, oxytocin secretion, neuroinflammation, synaptic dysfunctionn neuroendocrine, hyphothalamus

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