

Adrenal Insufficiency and SIRS - The Postoperative Nightmare

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Whatever would be the journal the teamwork matters with the triangulation of editors, reviewers and authors for a good quality research paper, likewise outcome of a surgical patient matters with surgeon, anesthetist and the treating physician. The intensivist in any critical care unit is under constant pressure to improve the quality of treatment that is delivered to the critically ill patients in his command.

A postoperative scenario presenting some of the features like fever or hypothermia, tachycardia, tachypnea, reduced or increased leukocyte count and hypotension can be attributed to inflammation, sepsis, hypovolemia and adrenal insufficiency. Systemic Inflammatory Response Syndrome (SIRS) and Adrenal Insufficiency, though both may be interlinked they are less considered diagnostic possibilities when compared to sepsis and hypovolemia. Though primary adrenal insufficiency presents with typical symptoms this is not true in the case of secondary adrenal insufficiency caused due to stress/surgery. Secondary adrenal insufficiency may present with subtle symptoms mimicking other causes to symptoms that may endanger the life of the patients.

The hypothalamic-pituitary adrenal (HPA) axis activation is very much essential for the maintenance of homeostasis following major trauma. Cortisol are the major contributors necessary for this normal homeostasis as they are required for immune function, catecholamines synthesis, maintenance of vascular tone, and innumerable functions. In major trauma/surgeries severe inflammation is mediated by proinflammatory cytokines and interleukins. Uncontrolled cytokine production induced by surgical trauma plays a central role in eliciting systemic inflammatory responses to elective surgery. Because cortisol suppresses the secretion of these inflammatory cytokines, an important function of the HPA axis is to prevent severe inflammation. Many studies have demonstrated that major surgeries, sepsis and severe trauma may be associated with relative adrenal insufficiency, which may contribute to a fatal outcome.

Intraoperative and postoperative homeostasis of vitals is important in the recovery period of surgical patients. SIRS can develop depending on the type of surgery and inflammatory response. It is believed to be due to relative deficiency of cortisol from adrenal gland or may be by peripheral resistance. Surgical trauma induced SIRS and their severities vary according to whether the surgical procedure is major, moderate or minor procedure. Postoperative inflammatory mediators interleukin-6 (IL-6) and C-reactive protein (CRP) are high with major surgeries compared to moderate and minor surgeries. Adrenocorticotrophic Hormone (ACTH) also increases high with major surgeries compared to minor surgical procedures. Duration of SIRS also gets longer in major surgery compared to moderate group.

Cortisol resistance can be there without the clinical features of Cushing's syndrome, but with elevated levels of plasma cortisol, free urinary cortisol and ACTH. Quarter of patients with preoperatively normal cortisol and ACTH, manifested deficient cortisol response and increased ACTH level postoperatively, as per Debono., *et al.* So postoperative vigilance on adrenal function is necessary to avoid delay and for early recovery of the SIRS patients [1-10].

Even though adrenal inadequacy is not a frequent cause for SIRS, foremost suspicion of adrenal in SIRS with the teamwork of Surgeon, Anesthetist and Physician can win the adrenal inadequacy, SIRS and heart of the patients!

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