A639 - Upregulation of cortisol in sepsis and its association with markers of hemostatic dysregulation

A Walborn; S Walborn; D Hoppensteadt; P Maia; R Green; G Wegryzn; M Mosier; J Fareed
Loyola University Medical Center, Maywood, United States

Introduction:
Cortisol levels have been found to be increased in sepsis patients, and high cortisol levels have been correlated with increased mortality. The purpose of this project is to assess the association of plasma cortisol levels with severity of coagulopathy in a population of patients with sepsis and clinically confirmed DIC.

Methods:
Citrate, de-identified plasma samples were collected from 52 adults with sepsis and suspected DIC at the time of ICU admission. Platelet count was determined as part of standard clinical practice. PT/INR and fibrinogen were measured using standard techniques on the ACL-ELITE coagulation analyzer. Cortisol, D-dimer, PAI-1, CD40L, NLRP3, and microparticles were measured using commercially available ELISA kits and were performed. DIC score was calculated using ISTH scoring algorithm.

Results:
Cortisol showed significant variation based on DIC status (Kruskal-Wallis ANOVA, p < 0.0001). Patients with non-overt DIC and overt DIC exhibited significantly elevated cortisol levels compared to healthy controls (p < 0.0001 for both groups). Cortisol levels showed DIC based variations. Patients with sepsis and overt DIC had elevated cortisol compared to patients with sepsis and no DIC (p = 0.0069) (Figure 1).

Correlations were evaluated between cortisol and hemostatic markers platelets, fibrinogen, INR, D-Dimer, and PAI-1 as well as with the inflammatory marker, NLRP3 and the platelet markers CD40L and microparticles. Cortisol showed significant correlations with D-Dimer, PAI-1, and INR. (D-Dimer Spearman r = 0.480, p = 0.001; PAI-1 Spearman r = 0.415, p = 0.002; INR Spearman r = 0.305, p = 0.037).

Conclusion:
Cortisol showed a significant association with hemostatic status in a population of patients with sepsis and well-defined coagulopathy. Cortisol levels were significantly elevated in patients with overt or non-overt DIC compared to healthy individuals and in patients with overt DIC compared to those with sepsis without DIC.

Image 1: