**A528 - The role of glycocalyx shedding and platelet adhesion in sepsis-induced microvascular dysfunction**

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**Introduction:**
Sepsis is associated with endothelial activation leading to alterations in global microcirculatory blood flow distribution. These effects might constitute key mechanisms leading to organ dysfunction. The aim of this study was to investigate the role of glycocalyx shedding and platelet adhesion on the development of microvascular dysfunction in the renal peritubular capillary system, and its association to the development of acute kidney injury (AKI).

**Methods:**
C57BL/6 (n=6-8/group) mice received vehicle (control), hyaluronidase (140 IU IA q8h during 24 hours) or underwent cecal ligation and puncture (CLP). Platelet adhesion and rolling in renal peritubular capillaries were assessed and quantified using multiphoton IVM in five different areas[1]. Plasma syndecan (SDC-1) and hyaluronan were measured to assess glycocalyx shedding. Neutrophil Gelatinase-Associated Lipocaline (NGAL) and creatinine levels were used as markers of AKI and measured using commercially available assays.

**Results:**
Hyaluronidase and CLP resulted in shedding of the glycocalyx (Fig. 1A) and increased platelet adhesion and rolling as compared to control (Fig. 2). Enzymatic-induced shedding did not involve a systemic inflammatory response, as shown by IL-6 levels (Fig. 1B). Irrespective of a systemic inflammatory response, shedding of the glycocalyx and increased platelet adhesion and rolling was associated with increased markers of AKI (Fig. 1C, D).

**Conclusion:**
Shedding of the glycocalyx increases platelet adhesion and rolling, resulting in AKI, suggesting this as a potential mechanism of organ injury. The increase in AKI markers in the noninfectious hyaluronidase model without IL-6 elevation indicate that glycocalyx denudation and secondary platelet adhesion may be mechanisms of organ injury independent from sepsis-induced systemic inflammation.

**References:**
Glycocalyx components, IL-6 and AKI markers

Figure 1

Image 2:

Platelet Adhesion and Rolling

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