Introduction:
Introduction: Endothelial hyperpermeability would play a major role in septic shock related organ failure. The aim of this study is to clarify the relationship between glycocalyx shedding and respiratory failure, SOFA score, plasma angiopoietin (Ang)-2 level and patient survival.

Methods:
Methods: Plasma samples were collected from 30 septic shock patients from admission to ICU discharge and 10 healthy volunteers. Plasma syndecan (Syn)-1 and Ang-2 were measured and clinical data was also collected. Septic shock patients were classified into 3 groups according to the time-course change of Syn-1 levels. Excess Syn-1 (>400 ng/ml) during 0 to 3 days and remaining high following 4 to 7 days were assigned to Group I. Excess Ang-2 during 0 to 3 days and decreased following 4 to 7 days were assigned to Group II. Moderate increase (<400 ng/ml) during 0 to 7 days were assigned to Group III.

Results:
Results: Plasma Syn-1 levels are positively associated with increased Ang-2 levels (r²=0.41, P= 0.005), suggesting that Ang-2 is involved in endothelial hyperpermeability. Fluid balance and ventilator-free days (VFD) are significantly increased in Group I as compared with Group III. SOFA score, Apache II and patient outcome does not show any differences between Groups I, II, and III.

Conclusion:
Conclusion: The positive correlation between glycocalyx shedding and fluid balance indicates plasma Syn-1 may be a valuable marker for endothelial hyperpermeability. The negative correlation between glycocalyx shedding and VFD indicates plasma Syn-1 may be a valuable marker for respiratory failure. The plasma level of Syn-1 for prognosis and organ failure excluding ARDS in patients with septic shock requires further investigation.