

MEETING ABSTRACTS

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## High sTREM-1 levels and low monocyte HLA-DR expression are associated with nosocomial infections and mortality in septic shock patients

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### Introduction:

TREM-1 is an innate immune receptor which activation promotes the development of exacerbated inflammatory response in septic shock. Plasma levels of soluble TREM-1, a marker of TREM-1 pathway activation, are correlated with patients' outcome. The role of TREM-1 in the development of immunosuppression in septic shock patients has never been assessed. So far, decreased monocyte HLA-DR expression (mHLADR) is the most studied marker of immune alterations in septic shock.

### Methods:

Plasma sTREM-1 levels were retrospectively measured at Day 1-2, 3-4 and 6-8 in 116 septic shock patients from the IMMUNOSEPSIS cohort (NCT02803346), included between 01/2016 and 12/2018, using a validated ELISA method. The associations between sTREM-1, mHLA-DR, 28-day survival status, and occurrence of ICU-acquired nosocomial infection (NI) were assessed.

### Results:

Neither sTREM-1 nor mHLA-DR levels at D1/2 were associated with the occurrence of ICU-acquired NI. However, 28-day mortality was significantly higher in patients with D1-2 sTREM-1 value superior to the median (39.6% vs 11.3%,  $p=0.0103$ ; median=539 pg/mL). A significant inverse correlation was found between mHLA-DR at D6-8 and sTREM-1 at D1-2 ( $S_p -0.378$ ,  $p<0.0001$ ) and at D6-8 ( $S_p -0.382$ ,  $p<0.0001$ ). At D6-8, when stratifying patients based on sTREM-1 (400pg/mL) and mHLA-DR (5000 AB/C), patients combining elevated sTREM-1 and low mHLA-DR presented with significantly higher 28day mortality (47.6% vs 8.7%,  $p = 0.0003$ , Chi-squared test) and NI incidence (31.8 vs 12%,  $p=0.044$ ) compared with patients with low sTREM-1 / high mHLA-DR.

### Conclusions:

This study shows for the first time that TREM-1 pathway activation is associated with septic shock-induced immunosuppression, as shown by an inverse correlation between sTREM-1 at baseline and mHLA-DR expression at D6-8. Persisting high sTREM-1 values and low mHLA-DR expression in septic shock patients are significantly associated with higher rate of ICU-acquired infection and mortality.