

Category : **Sepsis/septic shock: management**

**A168 - Extracorporeal hemoperfusion with an lps-selective mesoporous polymeric adsorbent decreases neutrophil-to-lymphocyte ratio (nlr) in septic shock patients**

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### **Introduction:**

Extracorporeal hemoperfusion (EH) eliminates excessive endotoxin or cytokines from circulation to increase survival [1]. NLR represents a sensitive and reliable prognostic/predictive biomarker of stress and inflammation [2-3]. Decreasing the NLR links to a favorable outcome in critically ill patients [4]. We investigated whether diminishing the NLR is feasible following EH with a novel adsorber based by hypercrosslinked styrene-divinylbenzene copolymer with immobilized lipopolysaccharide-selective (LPS) ligand designed to bind LPS and other biologically active molecules [5-7].

### **Methods:**

The study group included 9 septic shock post-surgery patients with abdominal sepsis, pyelonephritis, severe pneumonia, and endotoxin activity by EAA test exceeding 0.6 units. EH was performed using the Efferon LPS adsorber (Efferon, Moscow, Russia).

### **Results:**

EH resulted in a rapid decrease of both interleukin-1 and endotoxin levels, SOFA and APACHE II score values, increased PaO<sub>2</sub>/FiO<sub>2</sub> oxygenation index, restoration of blood pressure values. Requirements for norepinephrine were decreasing gradually and completely resolved in 1-3 days. Plasma lactate and pH levels returned to norm values by day 2-3. NLR was significantly decreased on day 5 post-HE. Seven patients survived with clinical improvements. Unfortunately, two patients exhibiting extraordinary increased pre-EH NLR (21.5 and 98), APACHE (>30), APTT (>40), and endotoxin activity (>0.9) died on days 4 and 8.

### **Conclusion:**

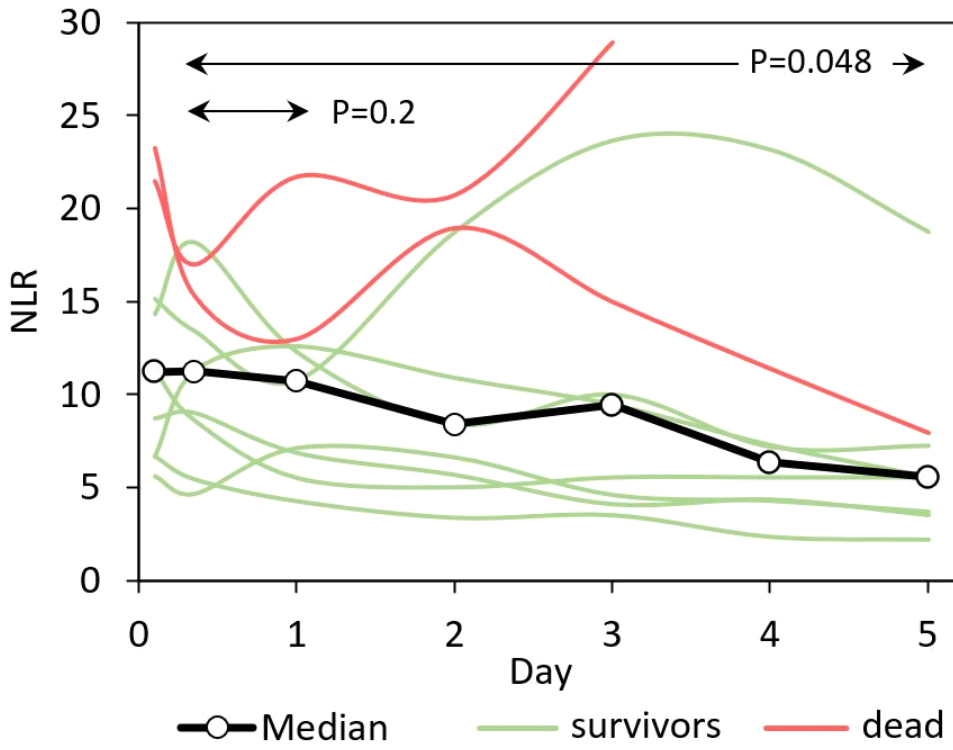
EH with Efferon LPS adsorber decreased the NLR on day 5 post-HE associated with survival of patients exhibiting pre-HE NLR values <16 and endotoxin activity <0.9 by EAA test.

### **References:**

1. Rachoin J et al. Crit Care Explor. 2: e0083, 2020. 2. Zahorec R. Bratisl Lek Listy 118321-323, 2017. 3. Liu Y et al. J Clin Lab Anal. 33: e22942, 2019. 4. Ham S et al. Sci Rep. 10: 21513, 2020. 5. Morozov AS et al. General Reanimatology 12:82-107, 2016. 6. Khoroshilov S. et al. General Reanimatology14: 51–60, 2018. 7. Ushakova N et al. General Reanimatology 16: 14-20, 2020.

**Image :**

# Neutrophil to lymphocyte ratio



*NLR dynamics following extracorporeal hemoperfusion*