

Category : **Sepsis: biomarkers**

**A98 - Effect of sevoflurane on the activation of human neutrophils in ex vivo models**

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#### **Introduction:**

*Objective* – is to study the effect of different concentrations of sevoflurane on the activation of human neutrophils in an ex vivo model.

#### **Methods:**

*Materials and methods* – the study was carried out on a cell culture of venous blood neutrophils of 5 healthy men. LPS and chemotaxis peptide fMLP as stimulants, was assessed by the expression level of CD11b and CD66b, IL-1b, IL-6 and IL-8, the level of phosphorylation of glycogen synthase GSK-3 $\beta$ . Annexin V and propidium iodide were used to assess apoptosis.

#### **Results:**

*Results* – incubation of neutrophils with LPS and fMLP statistically significantly increased the expression of these molecules, namely, when LPS was treated at a dose of 200 ng/ml, the expression of CD11b and CD66b increased 2.3 and 2.2 times ( $p=0.002$  and  $p=0.001$ , respectively), and upon treatment with fMLP at a dose of 100 nm., the expression of CD11b and CD66b increased by 1.7 and 2.0 times ( $p=0.025$  and  $p=0.03$ , respectively). Upon incubation of neutrophils with the same LPS concentration after exposure to sevoflurane at a dose of 1.5 MAC, the expression level of CD11b and CD66b increased compared to intact neutrophils. The change in CD11b expression in this experiment was statistically insignificant ( $p=0.055$ ), the change in CD66b expression was statistically significant ( $p=0.007$ ). Thus, exposure to sevoflurane at a dose of 1.5 MAC decreases the pro-inflammatory activation of neutrophils by LPS.

Stimulation of neutrophils by LPS was accompanied by dephosphorylation of GSK-3 $\beta$ , and exposure to 1.5 MAC of sevoflurane resulted in its phosphorylation. Thus, phosphorylation of GSK-3 $\beta$  in neutrophils by sevoflurane reduces the expression of CD11b and CD66b.

#### **Conclusion:**

*Conclusions* – sevoflurane has a pronounced anti-inflammatory effect due to the suppression of neutrophil hyperactivation; one of the possible mechanisms of the effect of sevoflurane on the function of neutrophils is the phosphorylation of GSK-3 $\beta$ .