Category 1 : **Sepsis - biomarkers**

A351 - *The assessment of bacterial load in icu nosocomial pneumonia*

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Introduction:

Development of new microbial load biomarkers proceeds, but still - there is no perfect one. Procalcitonin (PCT) is commonly used and its level correlates with the extent of microbial invasion. Earlier it was found that aromatic microbial metabolites (AMM) - are associated with the severity and mortality of ICU patients [1, 2]. Also the effectiveness of the treatment can be evaluated by the AMM level [1]. Experimental studies have shown their biological activity [3,4]. The aim of this work is to analyze different criteria of bacterial load in ICU patients with nosocomial pneumonia.

Methods:

In prospective study 46 patients with nosocomial pneumonia admitted to ICUs were observed in the first day. After liquid-liquid extraction from serum samples 9 phenylcarboxylic acids (benzoic (BA), phenylpropionic, cinnamic, phenyllactic (PhLA), p-hydroxybenzoic, p-hydroxyphenyllactic, p-hydroxyphenylacetic (HPhAA), p-hydroxyphenylpropionic and homovanillic (HVA)) were measured using GC-MS (Trace1310-ISQ, Thermo). DNA was extracted from bronchoalveolar lavage (BAL) samples from 5 of 46 patients for the quantitative detection of nosocomial bacteria by the PCR-real time (IQ5, BIORAD), PCT and presepsin were measured on the 1, 3, 7-9 days after the diagnosis of pneumonia. Spearman's correlation coefficient was found, data presented as medians with interquartile range (IR, 25-75%) using STATISTICA 10.

Results:

In serum samples of 46 patients the total concentration of 9 AMM was 3.4 (2.2-17.4) µM that was higher ($p<0.05$) than in healthy donors - 1.59 (1.46-1.85) µM (n=20). It correlated with APACHE II - 10 (6-18), SOFA - 3 (1-8) scores and mortality (41%): rs = 0.645, 0.666 and 0.717 respectively, $p<0.01$. A closer analysis of 5 patient samples revealed the following correlations: the total concentration of 9 AMM correlated with PCT - 0.580, HVA with PCT and presepsin – 0.810 and 0.709, respectively, PhLA with presepsin-0.770, p-HPhAA with total DNA of bacteria and DNA Enterobactereacea in BAL– 0.635 and 0.724, $p<0.01$.

Conclusions:

The level of aromatic microbial metabolites in blood serum of ICU patients with nosocomial pneumonia reflects the microbial load as well as the quantity of bacterial DNA, PCT and presepsin.

References:

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