Category :**Brain: Neurologic disease**

A72 - ***Concentration of the 4-hydroxyphenyllactic acid in the cerebrospinal fluid as a possible predictor of the bacterial meningitis***

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Introduction:

Several phenyl-containing acids which are metabolites of tyrosine and phenylalanine have been found in the cerebrospinal fluid (CSF) of neurosurgical patients with various intracranial diseases or injuries [1]. The goal of this study was to determine if the content of one of these acids (4-hydroxyphenyllactic acid, *p*-HPhLA) was specific for the neurosurgical patients with the suspected bacterial meningitis.

Methods:

The residues of CSF samples from neurosurgical patients (n=84) were obtained after diagnostic lumbar puncture, including patients with the suspected bacterial meningitis (n=9). Concentration of *p*-HPhLA was measured by gas chromatography–mass spectrometry [1]. Nonparametric the Mann-Whitney U-test and ROC analysis with the AUROC parameter (area under the ROC curve) was used.

Results:

The median values (interquartile range 25-75%) of the *p*-HPhLA for the patients without and with the suspected bacterial meningitis were 0.5 [0.3-1.1] and 1.1 [0.7-1.9] μmol/l, respectively. The concentration of the *p*-HPhLA was statistically higher in patients with the suspected bacterial meningitis (p=0.025).

The results of ROC analysis: AUROC – 0,730; standard error – 0.085, *p*-value – 0.025, two-sided asymptotic confidence interval (95%) – 0.563-0.898.

The cut-off value was 0.7 μmol/l. Sensitivity – 77.8% (95% CI: 44.3%; 94.7%), specificity – 62.7% (95% CI: 51.3%; 72.8%).

The patients with the concentration of the *p*-HPhLA equal or higher than 0.7 μmol/l had 5 times higher risk of the developing meningitis (unadjusted RR: 4.900 [95% CI: 1.082; 22.191]).

Conclusion:

The results of statistical analysis indicate that the concentration of the *p*-HPhLA can be a one-parameter criterion for the diagnosis of the bacterial meningitis in neurosurgical patients.

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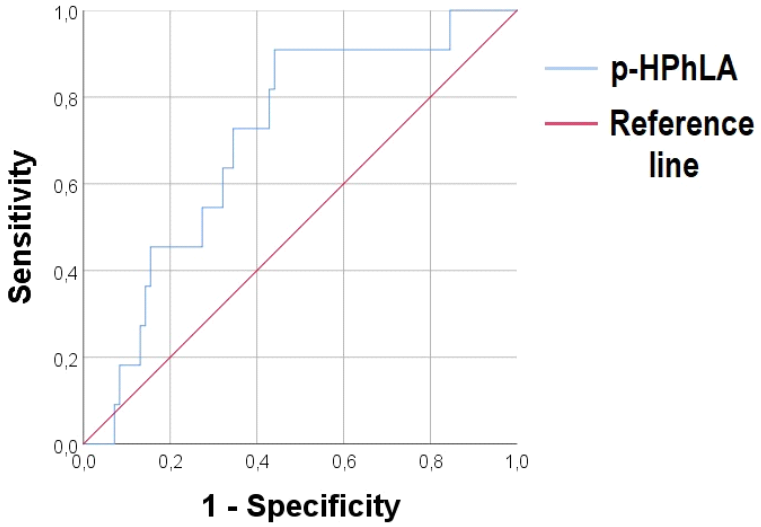
References:

1. Pautova A et al. Biomedical Chromotraphy. 35:e4969, 2021.

Image :



The ROC-curve of the p-HPhLA as the predictor of the bacterial meningitis developing