

Category : **Sepsis: biomarkers**

A14 - Connection between possible and proved predictors of the post-neurosurgical meningitis 4-hydroxyphenyllactic acid and lactate in cerebrospinal fluid

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Introduction:

The cerebrospinal fluid (CSF) concentration of the bacterial 4-hydroxyphenyllactic acid (*p*-HPhLA) was recently shown to be a possible one-parameter criterion for the diagnosis of the post-neurosurgical bacterial meningitis (PNBM) with cut-off value of 0.9 $\mu\text{mol/l}$ [1]. CSF lactate is known to be a PNBM marker with cut-off value of 4 mmol/l [2]. The goal of this study was to determine if the CSF content of these parameters correlate with each other in neurosurgical patients.

Methods:

The residues of CSF samples from neurosurgical patients (n=84) were obtained after diagnostic lumbar puncture. Concentration of CSF *p*-HPhLA was measured by gas chromatography–mass spectrometry, CSF lactate level was obtained from medical records of patients. CSF *p*-HPhLA and lactate were studied in dynamics in some patients (n=5).

Results:

p-HPhLA is known to correlate with the serum lactate [3]. Moderate positive statistically significant Spearman's rank correlation was revealed between CSF *p*-HPhLA and lactate ($r=0.55$, $p=0.01$ 2-tailed). Some patients were studied in dynamics to illustrate the revealed correlation. Patient 5 had no signs of PNBM; lactate and *p*-HPhLA were less than cut-off values (Fig.1). Patients 1-4 had signs of PNBM according to specific criterium of positive CSF culture (patients 1 and 3) and non-specific criteria of neutrophilic pleocytosis, high CSF protein and lactate (patients 2 and 4). *p*-HPhLA was higher than cut-off value in all patients with signs of PNBM, while lactate levels were lower than cut-off values in patients 3-4. Detailed analysis of the patients' medical records explained the revealed differences.

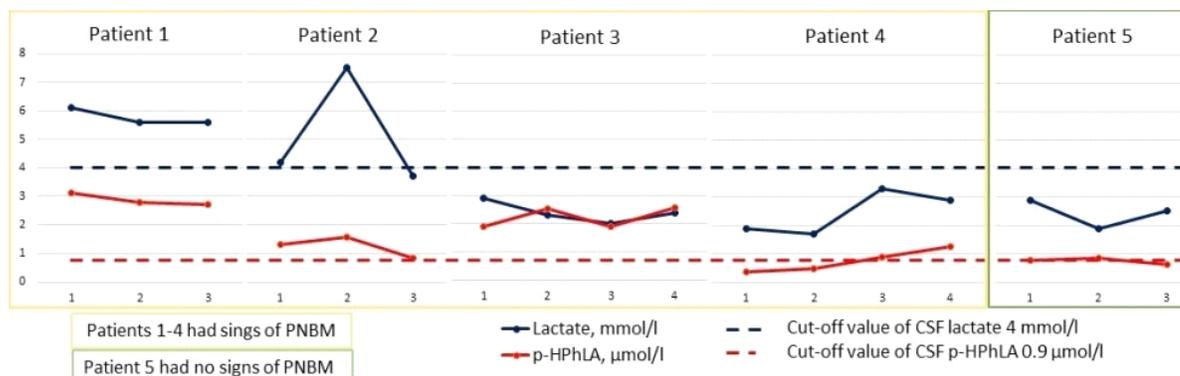
Conclusion:

The correlation between CSF lactate and *p*-HPhLA indicate the diagnostic significance and pathophysiological role of *p*-HPhLA in the development of PNBM.

References:

1. Beloborodova N et al. Critical Care 25(Suppl 1):P108, 2021.
2. Maskin L et al. Clin Neurol Neurosurg 115:1820-5, 2013.
3. Beloborodova N et al. Shock 50(3):273-9, 2018.

Image :



Dynamics of CSF lactate and p-HPhLA in post-neurosurgical patients with (patients 1-4) and without (patient 5) signs of PNBM.