P21

PRESEPSIN AS A NEW BIOMARKER FOR OLD EXPECTATIONS IN THE DIAGNOSIS AND PROGNOSIS OF BACTERIAL INFECTION IN CIRRHOSIS

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Introduction: Bacterial infections are frequent complications in cirrhosis with significant mortality. Early diagnosis is essential but still a diagnostic challenge from both the clinical and the laboratory part.

Aims: The aim of this study is to evaluate and compare the diagnostic and prognostic value of presepsin plasma levels with CRP and PCT in bacterial infections of patients with cirrhosis.

Material and Methods: A total of 216 patients (54.4% males, age: 57.6±10.3 yrs) were consecutively enrolled. At admission, presence of bacterial infection were assessed on the basis of conventional criteria, liver-oriented scores were calculated and plasma presepsin, CRP and PCT levels were measured. A short-term follow-up study was conducted to assess the development of organ system failure(s) and 28-day mortality associated to bacterial infections.

Results: Bacterial infection was found in 75 (34.7%) patients. Plasma presepsin levels were significantly higher in patients with infection as compared to those without (1002 pg/mL [575- 2149] vs. 477 [332-680] pg/mL, $p<0.001$), increasing correspondingly with the severity of the infection.

Presepsin levels were obviously higher in infectious episodes (32%) complicated by organ dysfunction(s), namely acute-on chronic liver failure (ACLF) (32%), than those without (2358 pg/mL [1398-3666] vs. 710 pg/mL [533-1277], $p<0.001$).

The diagnostic accuracy of presepsin for identifying patients with severe infection was similar to PCT and clearly superior to CRP established by ROC analysis (AUC: 0.846, 0.845 and 0.659, respectively, p=NS for presepsin vs. PCT, and $p<0.01$ for both the presepsin vs. CRP and PCT vs. CRP).

At the optimal cut-off value of presepsin (>1206 pg/ml) sensitivity, specificity, PPV and NPV were as follows: 87.5%, 74.5%, 61.8% and 92.7%, respectively.

Rate of 28-day mortality was higher among patients with >1277 pg/ml compared to those with ≤ 1277 pg/ml (46.9% vs. 11.6%, $p<0.001$).

In a binary logistic regression model, comprising gender, age, MELD score and acute phase proteins (APPs) one-by-one, MELD score >21 point (OR: 5.24, p=0.025), PCT >0.5 pg/ml (OR: 9.10, p=0.006) or CRP >40 mg/l (OR: 4.03, p=0.039) but not presepsin level were independet risk factor for 28-day mortality.

Conclusions: Presepsin is a valuable new biomarker for defining severity of infections in cirrhosis proving same efficacy as PCT. However, for the prediction of short-term mortality, liver-oriented scores and admission level of conventional APP proteins, particularly PCT are the appropriate tools.

ADDRESSING END-STAGE LIVER DISEASE - A MULTIFACETED CHALLENGE. EASL Special Conference • Glasg ow, United Kingdom • 25 - 27 September 2015