

## Abstract Book 2020

European Congress of  
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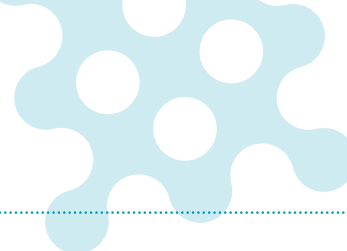


30th

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### Abstract 812

#### Determination of pentraxin 3 levels in cerebrospinal fluid during central nervous system infections

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**Background:** Pentraxin 3 (PTX3) is an acute phase protein; its plasmatic levels significantly raise during severe infections. Data on PTX3 levels in cerebrospinal fluid (CSF) of patients with central nervous system (CNS) infections are lacking. We aimed: a) to assess the diagnostic potential of measuring CSF PTX3 levels in patients with CNS infections; b) to establish CSF PTX3 cut-offs to distinguish between bacterial and aseptic meningoencephalitis (ROC curve).

**Materials/methods:** In this retrospective observational study, PTX3 levels were measured in CSF from 19 patients admitted to Trieste Hospital, Italy, with CNS infection from January 2016 to September 2018. CSF was collected by lumbar puncture performed within two hours from hospital admission. For each patient four samples of CSF were collected for obtaining these data: (1) leukocyte count, glucose and total protein levels, (2) culture and molecular amplification, (3) real-time PCR for virus (HSV 1-2, CMV, EBV, VZV, WNV, enteroviruses, TBEV and Mumps virus) and (4) PTX3 levels. The latest samples were first stored at -80°C and then analysed in duplicate using a home-made sandwich ELISA. The assay has a lower limit of detection of 100 pg/ml, with 8–10% inter-assay variability.

**Results:** A diagnosis of bacterial infection and aseptic meningoencephalitis was made in 7 (37%) and 12 (63%) patients, respectively. Subjects with bacterial infections showed significantly higher PTX3 levels (13.5 vs 1.27 ng/mL in aseptic meningoencephalitis,  $p=0.010$ ). We identified two different CSF PTX3 levels cut-offs. 1) The best cut-off to maximize Youden's J was 9.6 ng/mL with a sensitivity, specificity, positive predictive value and negative predictive value (NPV) of 71.4%, 91.4%, 83.3%, 84.6%, respectively; 2) The cut-off with higher NPV (100%) was 3.6 ng/mL: a diagnosis of bacterial infections was obtained in 0% patients with CSF PTX3 levels <3.6 ng/mL vs 58% of those with CSF PTX3 levels  $\geq 3.6$  ng/mL ( $p=0.017$ ).

**Conclusions:** CSF PTX3 levels are higher in bacterial meningitis than aseptic meningoencephalitis. A cut-off of 3.6 ng/mL of CSF PTX3 has a high NPV and can be used to exclude bacterial CNS infections.

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