29th ECCMID
Amsterdam, Netherlands
13 – 16 April 2019
The congress of ESCMID

P0032 The role of the peripheral double-positive CD4+CD8+ T-lymphocytes in tick-borne encephalitis

Sambor S. Grygorczuk*[1], Joanna Osada[2], Piotr Czupryna[1], Anna Moniuszko[1], Maciej Kondrusik[1], Milena Dabrowska[2], Slawomir Pancewicz[1]

[1] Deparment of the Infectious Diseases and Neuroinfections, Uniwersytet Medyczny w Białymstoku, [2] Department of the Hematologic Diagnostics, Uniwersytet Medyczny w Białymstoku

Background: The pathogenesis of the central nervous system (CNS) tissue injury in tick-borne encephalitis (TBE) has not been fully elucidated. Especially, the balance between the protective or pathogenic effects of different leukocyte subsets infiltrating CNS remains controversial. The peripheral double positive (DP) CD4+CD8+ T lymphocytes from a highly differentiated memory/effector cell population, expanded during viral infections, the role of which in TBE and other neurotropic flavivirus infections has not been studied.

Materials/methods: The blood and CSF samples were obtained from 39 patients with a serologically confirmed TBE (24 with meningitis - M, 13 with meningoencephalitis - ME, 2 with meningoencephalomyelitis), 11 patients with non-TBE aseptic meningitis (AM) and 14 blood donors (blood only, C). The fractions within the total lymphoid cell population were assessed cytometrically with a fluorochrome-stained monoclonal antibody set detecting CD3, CD4, CD8, CD16/56 and CD19. The results were analyzed with non-parametric tests with $p<0.05$ considered significant.

Results: The blood lymphocyte fractions did not differ significantly between TBE, AM and C groups. In comparison with blood, the TBE CSF lymphoid population contained increased median fraction of CD3+ (89% versus 71%) and CD3+CD4+ (70% versus 40%) lymphocytes and decreased fraction of CD19+ B lymphocytes (1% versus 15%), CD16+CD56+ NK cells (7% versus 14%) and minimally of CD3+CD8+ lymphocytes (20% versus 25%). None of these fractions significantly differed between M and ME patients or correlated with the clinical severity.

The DP CD4+CD8+ lymphocyte fraction was significantly increased in CSF (median 2.1%) in comparison with blood (0.7%). Within CSF it was higher in M than in ME subgroup (2.8% and 1.6%, respectively) and in patients with normal consciousness level compared to those with altered consciousness. In the AM group the CSF DP fraction was 2.8%, higher than in the TBE group as a whole but not different from the TBE meningitis patients.

Conclusions: The double-positive CD4+CD8+ lymphocytes accumulate preferentially in the CSF of patients with TBE and with viral meningitis of other etiology. Their higher percentage associates with milder presentation and lack of encephalitic symptoms, irrespective of etiology, suggestive of their protective role during the intrathecal infection and inflammation.