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### Clinical And Laboratory Characteristics Of Neuroinvasive Viral Zoonoses Detected In Continental Croatian Regions, 2017-2018

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**Purpose:** To analyze clinical and laboratory characteristics of neuroinvasive viral zoonoses detected in Croatia during 2017-2018.

**Methods & Materials:** From April 2017 to June 2018, a total of 120 patients with neuroinvasive disease from continental Croatian regions were tested for the presence of neuroinvasive zoonotic viruses: tick-borne encephalitis virus (TBEV), West Nile virus (WNV), Usutu virus (USUV), Toscana virus (TOSV), Tahyna virus (TAHV) and lymphocytic choriomeningitis virus (LCMV). Cerebrospinal fluid (CSF) and urine samples were tested for the presence of viral RNA using a real-time RT-PCR and/or nested RT-PCR. Serological tests of serum/CSF samples (IgM/IgG antibodies, IgG avidity) were performed using ELISA (TBEV, WNV, USUV), IFA (TOSV, LCMV) and virus neutralization test (WNV).

**Results:** Etiology was confirmed in 28/23.3% patients: TBEV in 20/16.7% and WNV in 8/6.6% patients by detection of IgM and IgG antibodies of low avidity and/or detection of viral RNA in CSF and urine. Majority of patients with TBEV infection were males (15/75.0%). Although infections were detected in all age groups, 15/75.0% patients were less than 60 years of age. The main clinical symptoms were headache (18/90.0%), weakness (18/90.0%), nausea (12/60.0%) and vomiting (8/40.0%). Fever >39°C was noted in 16/80.0% patients. CSF leukocyte count ranged from 41-3520/mm<sup>3</sup> with mononuclear cell predominance in 15/75.0% patients. All but one patient fully recovered. WNV infection was reported in 5/62.5% males and 3/37.5% females. All but one patient (7/87.5%) were older than 60 years. Majority of patients reported underlying diseases: hypertension (3/37.5%) and cerebrovascular disease (3/37.5%). The main clinical symptoms were headache (5/62.5%) and weakness (5/62.5%), while fever >39°C was noted in 4/50.0% patients. CSF leukocyte count ranged from 56-1096/mm<sup>3</sup> with mononuclear cell predominance in 4/50.0% patients. One patient died. USUV, TOSV, TAHV and LCMV infections were not detected during the tested period.

**Conclusion:** TBEV infections were more common in patients less than 60 years of age, while WNV infections were most common in elderly. High fever was noted in 80.0% TBEV cases compared to 50.0% WNV cases. CSF pleocytosis was higher in TBEV infection.