Among neuroinvasive zoonotic viruses, tick-borne encephalitis virus (TBEV) and West Nile virus (WNV) are the most widely distributed. Usutu virus (USUV) is detected in many bird species in Europe, however, human neuroinvasive infections are rarely reported. Although many Toscana virus (TOSV) infections are asymptomatic or presented with influenza-like symptoms, the virus displays a strong neurotropism. Outbreaks of TOSV meningitis were reported in several European countries bordering the Mediterranean Sea. Meningitis occurs occasionally during TAHV infection. Lymphocytic choriomeningitis virus (LCMV) is a neglected virus which may cause aseptic meningitis, especially in immunocompromised persons.

**Purpose:**
The aim of this study was to analyze clinical and laboratory characteristics of neuroinvasive viral zoonoses detected in Croatia during 2017-2018.

**Methods and Materials:**
From April 2017 to June 2018, a total of 120 patients with neuroinvasive disease from continental Croatian regions (fig.1) were tested for the presence of neuroinvasive zoonotic viruses: TBEV, WNV, USUV, TOSV, TAHV and 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 and CSF samples (IgM/IgG antibodies) were performed using enzyme-linked immunoassorbent assay (TBEV, WNV, USUV), indirect immunofluorescence assay (IFA; TOSV, LCMV) and virus neutralization test (WNV). Commercial ELISA and IFA (Euroimmun, Lübeck, Germany) were used for detection of TBEV, WNV, USUV and TOSV antibodies. LCMV Armstrong strain was used as antigen for in-house IFA.

**Results:**
Etiology was confirmed in 28/23.3% patients. TBEV was documented 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 samples. 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/mm³ 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%), cerebrovascular disease (3/37.5%) and diabetes (1/12.5%). 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/mm³ with mononuclear cell predominance in 4/50.0% patients. One patient died. Acute USUV, TOSV, TAHV and LCMV infections were not detected during the tested period.

**Conclusions:**
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.