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West Nile virus outbreak in Croatia, 2018

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Introduction: West Nile virus (WNV) is one of the most widely distributed arboviruses. In Croatia, first clinical cases of WNV neuroinvasive disease were reported in 2012, thereafter cases were continuously detected. In addition, infections in horses and poultry were also documented. In 2018, the largest outbreak of WNV occurred with more than 60 human cases. For the first time in Croatia, WNV infection was detected in wild birds.

Aims: The aims of this study were to analyze epidemiological characteristics and molecular epidemiology of WNV infections detected during 2018 transmission season.

Methods: From January to December 2018, a total of 182 patients with neuroinvasive disease and 70 patients with symptoms compatible with WNV fever were tested for the presence of WNV RNA, IgM/IgG antibodies and IgG avidity. In addition, a total of 2759 horses were tested for the presence of WNV IgG antibodies. IgG positive serum samples were further tested for IgM antibodies for confirmation of recent infection. Thirty-five dead wild birds were tested for WNV RNA. Meteorological conditions (air temperature, precipitation) were also analyzed.

Results: WNV infection (WNV neuroinvasive disease/WNV fever) was confirmed in 61 patients. Cases occurred in ten continental Croatian counties. Phylogenetic analysis of six detected strains showed circulation of WNV lineage 2. Acute asymptomatic infection was documented in 13/0.03% horses from three continental counties while IgG antibodies were detected in 232/8.4% horses. Seroprevalence rates were higher in continental counties (3.2-26.0%) compared to counties on the Adriatic coast (0-4.8%). IgM positive horses were detected from March to June, while

human infections occurred from July to October. Two WNV positive goshawks were detected in September. The early start of WNV season was associated with favorable climate conditions (very warm April and May).

Conclusion: Our results confirm the need of continuous multidisciplinary (“*One health*”) surveillance of this emerging viral zoonosis.