Acute Anteroseptal ST Elevation Myocardial Infarction (STEMI) in the West Nile Virus Infection

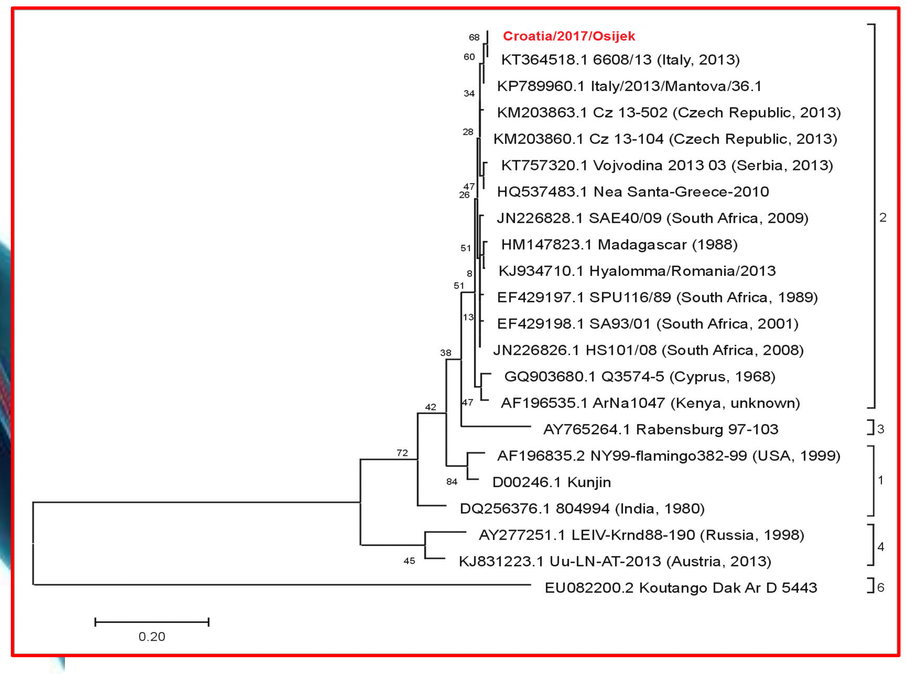
Dario Sabadi[1,2], Ljiljana Perić[1,2], Ilija Rubil[1,2], Dubravka Lišnjić[1,2], Mario Duvnjak[1,2], Danijel Šimašek[1,2], Barbara Grubišić[1,2], Vedrana Radočaj[1], Vedrana Baraban[2,3], Vladimir Savić[4], Irena Tabain[5], Ljubo Barbić[6],Bernard Kaić[5], Vladimir Stevanović[6], Tatjana Vilibić-Čavlek[5,7]

[1]Clinic for Infectious Diseases, University Hospital Center Osijek, Osijek, Croatia
[2]Faculty of Medicine, Josip Juraj Strossmayer University of Osijek, Osijek, Croatia
[3]Department for Cardiovascular Diseases, University Hospital Center Osijek, Osijek, Croatia
[4]Croatian Veterinary Institute, Zagreb, Croatia
[5]Croatian Institute of Public Health, Zagreb, Croatia
[6]Faculty of Veterinary Medicine, University of Zagreb, Zagreb, Croatia
[7]School of Medicine University of Zagreb, Zagreb, Croatia

West Nile virus (WNV) is one of the most widely distributed arboviruses. Birds are the reservoir hosts and mosquitoes of the genus *Culex* are the principal vectors of WNV. Due to a low-level viremia, humans represent incidental or "dead-end" hosts for WNV. Although many WNV infections are asymptomatic (~80%) or presented as a mild febrile disease (WNV fever), some patients develop a neuroinvasive disease (meningitis, encephalitis, myelitis) with a fatality rate of 10%. Cardiac involvement such as WNV myocarditis has been documented pathologically in mammals, but has rarely been reported in humans.

Purpose: To present a case of acute anteroseptal ST elevation myocardial infarction in the WNV meningoencephalitis.

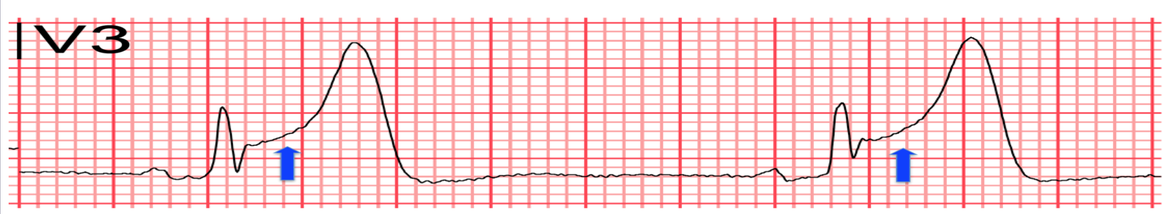
Material and Methods: A 77-year-old patient was hospitalized in the late summer of 2017 on the second day of the illness manifested by a fever up to 38.6°C and diarrhea. The patient did not report recent travel but recalled mosquito bites. Past medical history included hypertension. At admission, routine laboratory tests, electrocardiogram (ECG) and chest x-ray were performed. In addition, cerebrospinal fluid (CSF), urine and blood samples were collected for a virological analysis.



Phylogenetic tree based on 203 nucleotide long sequences of the West Nile virus NS5 gene. Virus sequenced in this study is indicated in bold. Sequences available in the GenBank were used for comparison. Accession numbers precede virus strain designations. Location and year of detection are given next to virus strain designation where appropriate. West Nile virus lineages according to Rizzoli et al (2015) are indicated next to the tree. Scale bar indicates nucleotide substitutions per site.

Results: At admission, WBC count was 24.6 (reference range 3.4-9.7x10^9/L) with neutrophilia (92%, range 44-72%) and very high levels of cardiac enzymes: creatinine phosphokinase 1856 (range 17-153 U/l), lactate dehydrogenase 433 (range 2-241 U/L), myoglobin 3116 (range 20-80 µg/L) and troponin I 17640 (range 0.000-0.056 µg/L). ECG showed ST elevation. In the cardiac intensive care unit, an emergency coronary angiography was performed which confirmed the coronary artery stenosis. The patient's condition complicated on the 4th day of the illness by an altered level of consciousness with progression to coma, accompanied by neck stiffness and positive meningeal signs. Computed tomography of the brain was normal. Cerebrospinal fluid (CSF) showed pleocytosis with 26 cells/mm^3, predominantly mononuclears (73%) and elevated protein level (1.151, range 0.170-0.370 g/L). Both CSF and urine were positive for WNV RNA by real-time and nested RT-PCR. Phylogenetic analysis showed WNV lineage 2. The patient was initially treated with acyclovir, ampicillin and cefepime parenterally with supportive therapy (antiedematous, antiaggregation and antihypertensive therapy). On the 8th day of the illness a respiratory insufficiency developed. The patient was intubated and mechanically ventilated, but developed hypotension and low oxygen saturation in spite of an adequate respiratory support. Despite the cardiopulmonary resuscitation, the patient died due to cardiopulmonary arrest.

Conclusion: Although cardiac involvement is not frequently reported in the course of a WNV infection, physicians should be aware of the possibility of a WNV-related myocardial infection.



Electrocardiogram showing ST elevation.

Acknowledgment
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