

Virus Zapadnog Nila i virus Usutu u divljih ptica u Hrvatskoj

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Sažetak

Virus zapadnog Nila (WNV) i virus Usutu (USUV) su srodni flavivirusi s preklapanjem zemljopisnog raspona vrsta prijenosa, domaćina i vektora. Svaki od ova dva virusa se dodatno može razvrstati u više genskih loza. Ptice su im prirodni rezervoari, vektori su komarci, dok ljude i ostale kralješnjake smatramo slučajnim, odnosno krajnjim domaćinima. Brojne ptičje vrste mogu biti zaražene, no manji broj vrsta iz reda vrapčarki, močvarica i sova zbog dugotrajne i izrazito visoke viremije smatramo kompetentnim rezervoarima koji služe za daljnje širenje virusa. Pojedine ptičje vrste su posebno osjetljive prema ovim virusima pa infekcija, osim teške kliničke slike u kojoj prevladavaju neurološki simptomi, može rezultirati i uginućem. Prema sojevima WNV koji prevladavaju u Europi, posebno su osjetljivi jastreb (*Accipiter gentilis*) i kobac (*Accipiter nisus*), ali i druge grabljivice. Kos (*Turdus merula*) i velika sova (*Strix nebulosa*) posebno su osjetljivi na USUV. Iako su u proteklom desetljeću u Hrvatskoj u više navrata dokazane infekcije ljudi i konja, WNV i USUV su u ptica u Hrvatskoj prvi put dokazani u rujnu 2018. godine. WNV je detektiran u dva oboljela jastreba iz sjeverozapadne Hrvatske. Jastrebovi su pokazivali izrazite neurološke simptome, a potom su i uginuli. Detektirani WNV pripada genskoj lozi 2, kao i brojni humani izolati iz Hrvatske detektirani u istoj sezoni prijenosa. Analiza cijelog genoma WNV iz jastreba pokazuje najveću sličnost (99,8 %) sa sojevima dokazanim u pticama iz Njemačkoj iz iste godine. USUV je detektiran u mozgu uginulog kosa u središnjoj Hrvatskoj. Detektirani USUV pripada genskoj lozi Europa 2, kao i humani izolat iz istočne Hrvatske i izolat iz komarca u Zagrebu koji su detektirani u istoj sezoni prijenosa. Analizirani dio gena NS5 soja USUV iz kosa identičan je virusima dokazanim u mozgu kosova u Češkoj 2017. i u Austriji 2016. godine. S obzirom na učestalost infekcija WNV i USUV u slučajnim domaćinima u Hrvatskoj, ova dva nalaza u pticama predstavljaju tek naznaku nazočnosti i značaja ovih virusa za populaciju divljih ptica u Hrvatskoj. Potrebna su daljnja istraživanja WNV i USUV u ptica u Hrvatskoj, naročito vrsta koje su osjetljive na infekciju ovim virusima.

Ključne riječi: divlje ptice, virus Zapadnog Nila, virus Usutu, Hrvatska

West Nile virus and Usutu virus in wild birds in Croatia

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Abstract

West Nile virus (WNV) and Usutu virus (USUV) are related flaviviruses with overlapping geographic ranges of transmission species, hosts, and vectors. Each of these two viruses can be further classified into multiple genetic lineages. Birds are their natural reservoirs, vectors are mosquitoes, while humans and other vertebrates are considered accidental dead-end hosts. Numerous bird species can be infected, but few species from orders Passeriformes, Charadriiformes and Strigiformes are considered competent reservoirs that further spread the virus due to the long-lasting and high-level viremia. Certain bird species are particularly susceptible to these viruses, so infection, in addition to severe clinical signs with pronounced neurological symptoms, can also result in death. Hawks (*Accipiter gentilis*) and sparrowhawks (*Accipiter nisus*) along with other raptors are particularly susceptible to the infection with WNV strains prevalent in Europe. Blackbird (*Turdus merula*) and great owls (*Strix nebulosa*) are particularly sensitive to USUV. Although human and equine infections have been documented on several occasions in Croatia during the past decade, WNV and USUV were first detected in birds in Croatia in September 2018. WNV was detected in two diseased hawks from northwestern Croatia. The hawks showed pronounced neurological symptoms and subsequently died. The detected WNV belongs to genetic lineage 2, as well as numerous human isolates from Croatia in the same transmission season. The whole WNV genome analysis shows the high similarity (99.8%) to strains detected in the same year in birds from Germany. USUV was detected in the brain of dead blackbird in central Croatia. The detected USUV belongs to Europe 2 genetic lineage, as well as the human isolate from eastern Croatia and the mosquito isolate in Zagreb, which were detected in the same transmission season. The analyzed part of the NS5 gene of the USUV strain from blackbird is identical to the viruses detected in blackbird brains in the Czech Republic in 2017 and in Austria in 2016. Given the frequent WNV and USUV infections in accidental hosts in Croatia, these two findings in birds are just a sign of the presence and importance of these viruses for the wild bird population in Croatia. Further research is needed on WNV and USUV in birds in Croatia, especially in species that are highly susceptible to infection with these viruses.

Keywords: wild birds, West Nile virus, Usutu Virus, Croatia