

WEST NILE VIRUS INFECTIONS IN EUROPE – GENERAL FEATURES

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Summary

In the past West Nile virus (WNV) infections occurred only sporadically in Europe, limited in time and geographic distribution. This changed dramatically since the emergence of an exotic lineage 2 WNV strain in Hungary in 2004 [Bakonyi et al., *Emerg. Infect. Dis.* 12, 618-623 (2006)]. Following a few years of adaptation, this virus strain dispersed widely in 2008, and was identified all over Hungary and in the eastern part of Austria [Wodak et al., *Vet. Microbiol.* 149, 358-366 (2011)]. Most likely during that time this WNV lineage also spread to Croatia, Slovenia and Serbia. In 2010, a clinically severe outbreak occurred in the Thessaloniki area of Greece with more than 200 human neuroinvasive cases and more than 30 deaths. Genetic analysis demonstrated the above-mentioned lineage 2 WNV as the causative agent, however with an amino acid exchange, which might have been responsible for the increased neuroinvasiveness [Papa et al., *Emerg. Infect. Dis.* 17, 920-922 (2011)]. In 2012, overt West Nile disease in humans and animals was also reported from several Balkan states.

Since 2008 widespread outbreaks of lineage 1 WNV have been reported in northern Italy as well as outbreaks of a different type of a lineage 2 WNV (Volgograd strain) in Romania.

We demonstrated that the virus is overwintering in mosquitoes in outbreak areas, indicating that central, southern and eastern Europe must be aware of further WNV outbreaks in the future.

General features of WNV infections and an overview of WNV epidemiology in Europe are presented.

Keywords: West Nile virus; Europe; epidemiology.

Sažetak

Infekcija virusom Zapadnog Nila u Europi – osnovna obilježja

U prošlosti se infekcija virusom Zapadnog Nila (VZN) u Europi javljala sporadično te vremenski i geografski ograničeno. To se stubokom promijenilo otkad se 2004. godine u Mađarskoj pojavila egzotična linija 2 VZN-a [Bakonyi et al., *Emerg. Infect. Dis.* 12, 618-623 (2006.)]. Nakon pet godina prilagodbe, soj te linije nadaleko se proširio te je 2008. dokazan na cijelom području Mađarske i u istočnom dijelu Austrije [Wodak et al., *Vet. Microbiol.* 149, 358-366 (2011.)]. Ta se linija vjerojatno u tom razdoblju proširila i na Hrvatsku, Sloveniju i Srbiju. Klinički teški oblik infekcije VZN-om pojavio se 2010. u Grčkoj s više od 200 neuroin vazivnih slučajeva i više od 30 umrlih. Genetska analiza pokazala je da je uzročnik te epidemije bila spomenuta linija 2 VZN-a s izmijenjenim aminokiselinskim sastavom, što je vjerojatno bio uzrok njezine pojačane neuroin vazivnosti [Papa et al., *Emerg. Infect. Dis.* 17, 920-922 (2011.)]. Kliničko očitovanje infekcije VZN-om zabilježeno je 2012. u ljudi i životinja u nekoliko balkanskih država. Od 2008. zabilježeno je nekoliko pojava infekcije linijom 1 VZN-om u sjevernoj Italiji te pojava različitih tipova linije 2 VZN-a (soj Volgograd) u Rumunjskoj. Dokazali smo da virus prezimljuje u komaraca na područjima gdje se trajno javlja, što upućuje na zaključak da se u budućnosti mogu očekivati nove pojave infekcije VZN-om u središnjim, južnim i istočnim dijelovima Europe.

U izlaganju su iznesena opća obilježja infekcije VZN-om i općenit pregled epidemiologije te infekcije u Europi.

Ključne riječi: virus Zapadnog Nila; Europa; epidemiologija.

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