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West Nile virus antibodies in wild birds of prey from the North of Portugal

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Abstract

West Nile Virus (WNV) is a mosquito-borne arbovirus spread worldwide, with an enzootic cycle among ornithophilic mosquitoes and birds. Rising temperatures, droughts and water shortage, and the increased movement of people and goods around the world, have facilitated and increased the risk of transmission of this virus in European countries. Seroepidemiological surveys of WNV are useful to understand the real spread of the virus in wild populations and prevent contagion to humans. Samples from 91 birds, of 25 different species and 10 different orders, were tested for antibodies to WNV using a commercial ELISA serological kit. Most of the birds were from the North of Portugal, and three were of unknown origin. Thirteen samples (14.3%; 7.8%, 95% CI: 7.8-23.2%) turned out positive for WNV antibodies. We would like to highlight the high prevalence found in owls. i.e. tawny owl, *Strix aluco* (n=6; 40.0%; 95% CI: 16.3-67.8) and barn owl, *Tyto alba* (n=3; 27.3%; 95% CI: 6.0-61.0%).

The most frequent transmission pathway of WNV infection in birds is through mosquito bite, previously infected by feeding on a viraemic bird or another animal. West Nile Virus has been isolated from other hematophagous ectoparasites, and the occurrence of several arthropods in nocturnal raptors has already been reported. Mosquito feeding preferences may be influenced by distinct factors. In most species of owls, the highest peak of body temperature is reached during the night period, coinciding with the maximum mosquito activity. This group of birds has also a weaker protective behaviour, since they stand quiet in the nests or perches for long periods. This is a seroprevalence study, and the possibility of cross-reactivity with related flaviviruses, such as dengue virus and tick-borne encephalitis virus, cannot be ignored.

Key words: climatic changes, seroprevalence, West Nile virus, zoonosis