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Seroprevalence of West Nile virus antibodies in wild birds of prey in Portugal

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Abstract

West Nile virus (WNV) is one of the most widely distributed arboviruses in the world with zoonotic potential. Seroepidemiological studies are necessary to establish proper prevention and control strategies. WNV-total antibodies were searched in blood serum using an ELISA commercial kit. Samples from 136 individuals of diurnal raptors were analysed, from eight distinct Accipitriformes species. Eleven nocturnal birds of prey, belonging to four different species of Strigiformes were tested. In this study, 47 samples were positive (34.56%; 95% CI: 26.62-43.19%). A seropositivity of 31.62% (n=43; 95% CI: 23.92-40.14%) was found in diurnal, and 36.36% (n=4; 95%: 0.81-7.36%) in nocturnal raptors.

Despite the small nocturnal raptors sample, the seropositivity percentage was similar between the two groups. WNV is transmitted to raptors mainly through the bite of infected mosquitoes, although oral transmission has already been described. Regarding nocturnal raptors, vectors are also the most likely transmission route, suggesting that louse flies, common avian hematophagous parasites, may be involved. There is evidence that the mosquito population plays a key role in the transmission of zoonotic vector-borne pathogens. Studying how the mosquito community affects the seroprevalence of WNV in both groups would be an interesting follow-up.

In birds, as in mammals, protection against WNV is determined by the presence of antibodies in the blood. As antibodies are developed following exposure and infection with WNV in adult birds, detecting such antibodies may suggest disease, past subclinical infection, or recovery from a non-fatal infection. Furthermore, cross-reactivity between related flaviviruses may occur.

Key words: *Accipitriformes, seroprevalence, Strigiformes, West Nile virus, zoonosis*

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