



IMPORTANCE OF DOGS AS SENTINELS OF WEST NILE VIRUS ACTIVITY IN URBAN AND SUBURBAN AREAS



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BACKGROUND

West Nile Virus (WNV) is a virus included in the Japanese encephalitis sero-complex within the genus *Flavivirus* (2, 4), that has a wide geographical distribution in the Mediterranean Basin (Fig. 1). In August 2010, cases of West Nile disease were reported for the first time in Sicily. Neurological symptoms were observed in native horses resident in the rural areas around the province of Trapani, in the western part of the island (1). During the epidemic, important critical questions on when the virus was introduced in the area and about whether the virus had circulated/was circulating in the urban area, emerged and needed to be answered. A retrospective study using dog serum samples was designed to answer these questions.

METHODS

Between January 2009 and September 2010, 182 sera were collected by public and private vets and examined for the presence of WNV neutralising antibodies by using neutralisation assays. All samples belonged to urban dogs hosted in animal shelters or staying in vet surgeon located in towns of the western area of Sicily (Fig. 2).

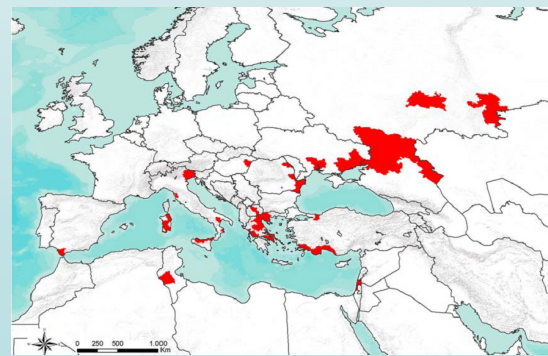


Figure 1. West Nile Disease in the Mediterranean Basin (2011)

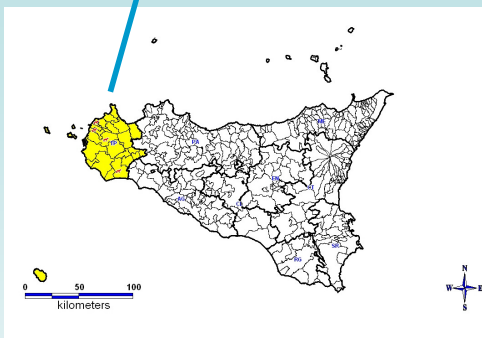
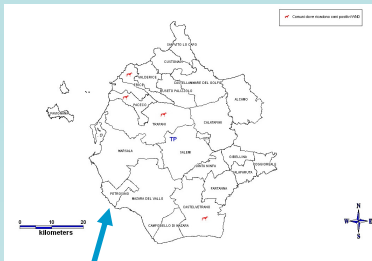


Figure 2. Seropositive dogs in 2009-2010 (Trapani - Sicily)

RESULTS

Out of the 182 samples tested, 11 (6.0%) had WNV neutralising antibodies with titres ranging from 1:10 to 1:80. A prevalence of 2.7% (n=74) was found in dogs sampled in 2009 whereas a prevalence of 8.3% (n=108) in the animals sampled in 2010 (Tab. 1). The highest prevalence (12.9%) was found in samples collected in the moth of September 2010 (n=31). WNV neutralizing titers were also found in a dog sampled in May 2009. There was a complete correspondence between areas with positive dogs and areas where the WND horse cases occurred.

	2009	2010
WND POSITIVE / TOTAL (%)	2.7 %	8.3 %

Table 1. Serological tests

CONCLUSION

WNV infected dogs have been frequently detected in serological surveys. Even though not playing a major role in the epidemiology of WNV, dogs have been shown to be incidentally involved in the maintenance of the virus (3, 5). This WNV retrospective study on dog sera was extremely useful to prove that WNV was in Sicily far before the first reported clinical case and that the virus had circulated/was circulating in the urban areas. It confirms the importance of these domestic animals as sentinels for either early detection or monitoring the virus activity in urban and sub-urban areas with possible threat to human health.

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