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Emerging viruses

West Nile virus infection in humans in southern Greece for four consecutive years, 2011-2014

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Objectives: During the summer-autumn 2010, an outbreak of WNV infection occurred for the first time in Greece mainly located in Central Macedonia. The following years (2011-2014) WNV continued to circulate in the already affected areas and dispersed southwards to new unaffected ones. The aim of this study is to present the main findings on WNV occurrence in southern Greece from 2011 to 2014.

Methods: Serum and CSF specimens from patients seeking laboratory diagnosis for suspected WNV infection were tested for anti-WNV IgM and IgG Abs using ELISA (WNV IgM capture and IgG DxSelect, Focus Diagnostics, USA). Whole blood and CSF were tested for WNV RNA using real-time RT-PCR. The available epidemiological data were stored and processed in specially designed databases in GIS environment and their geographical distribution in relation to WNV cases by municipality is presented.

Results: Since the summer-autumn 2011, 124 laboratory-diagnosed cases of WNV infection were identified and reported to the HCDCP from patients presented with symptoms and signs compatible with WNV infection. In 87 cases (70%) the patients had severe neurological manifestations and were classified as WN neuroinvasive disease (WNND) cases, while the remaining 37 (30%) were characterized as WN fever (WNF) cases. Hypertension and diabetes mellitus were the most common risk factors for developing WNND. A total of 15 deaths occurred, all in elderly patients with underlying diseases.

	Year			
WNND	2011	2012	2013	2014
Number of cases	25	45	13	4
Median age (range) (years)	67 (25-86)	67 (19-25)	79 (17-95)	81 (76-85)
Male-to-female ratio	2.6:1	2.5:1	1.3:1	1:1
Deaths	7	5	1	2

In 2011, most cases were identified in the Eastern Attica prefecture, especially in the Marathon municipality where the Schinia wetland favored the reproduction of mosquito vectors. During summer of 2012 and 2013, WNV cases occurred in municipalities of southern and northern Attica respectively, in areas near surface water bodies of Attica (Ilisos and Kifisos Rivers - Pikrodafni, Polydroso and Rematia streams). Sporadic cases were reported from southwestern Greece (Achaia, Iliia, Ionian Islands). The detection of specific IgG Abs in patients from previously unaffected regions indicated the previous circulation of WNV in these areas. In 2014, the timely use of larvicides directly to mosquito-breeding sites in late spring and early summer reduced the number of emerging mosquitoes and contributed to the dramatic reduction of WNV cases.

Conclusion: The spread of the virus in newly affected areas suggests that WNV has been established in Greece and disease transmission may continue in the future. Epidemiological surveillance, integrated mosquito management programs and public education on personal protection are crucial to prevent the WNV transmission and control the disease.