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Zika virus infections in Lombardy, Northern Italy 2016

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Background: Zika virus is a mosquito-borne virus belonging to the *Flaviviridae* family (genus *Flavivirus*) that has spread in the Americas. Since 2015, 47 countries and territories in the Americas have confirmed autochthonous, vector-borne transmission of Zika virus disease. The aim of this study was to investigate Zika virus infections in patients returning to Lombardy Region and contacts.

Material/methods: serum samples of patients with potential Zika virus (ZIKV) infections were tested for the presence of specific IgM and IgG antibodies (Anti-Zika virus ELISA (IgM) and Anti-Zika virus ELISA (IgG) by Euroimmun, Lübeck, Germany). Furthermore, the presence of specific ZIKV antibodies was confirmed by plaque reduction neutralization test (PRNT). Serum, saliva, urine and semen samples, collected during the acute phase, were examined for the presence of ZIKV RNA with two methods: a real-time reverse transcriptase-polymerase chain reaction (RT-PCR) targeting a conserved region of ZIKV and a pan-Flavivirus heminested RT-PCR targeting a conserved region of the NS5 gene followed by sequencing of amplicons.

Results: in the period 18 February-24 November 2016, 18 confirmed cases of Zika virus infection were diagnosed in Lombardy Region (10 million inhabitants). Seventeen (7 female and 10 male) patients had an history of recent travel: 5 from the Dominican Republic, 4 from Jamaica, 3 from Brazil, 1 from El Salvador, 1 from Venezuela, 1 from Virgin Islands, 1 from Bahamas and 1 from French Antilles while 1 patient, the wife of the patient returning from the Dominican Republic, had not travelled. Thus, a sexual transmission was documented. In 13/18 cases Zika infection was symptomatic. Serum/plasma, saliva, urine and semen were analyzed. Zika virus-RNA was detected in 13/13 (100%) urine samples of symptomatic patients, in 9/11 (82%) saliva samples while the viral genome was identified in 5/13 (38,5%) plasma samples. Furthermore, in 4/7 (57%) semen samples, collected in the acute phase of the infection, was detected Zika virus-RNA. In the symptomatic period, Zika virus specific IgM were detected in 7/13 (54%) patients while 0/13 (0%) specific IgG were detected. Zika virus-RNA has been detected in serum up to 54 days, in urine up to 40 days, in saliva up to 26 days and in semen up to 19 days after onset of symptoms.

Conclusions: Zika virus infection show a prolonged persistence in peripheral blood with the potential of autochthonous spread to competent mosquitoes. In addition, the presence of virus in semen is an additional factor for autochthonous infections. Thus, sexual partners of travelers must be included in surveillance protocols.