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Serological update of the Chikungunya epidemic outbreak in Italy

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Background: Chikungunya (CHIKV) is an arthropod-borne virus belonging to the *Alphavirus* genus in the *Togaviridae* family. Epidemic Chikungunya virus (CIKV) infections result common limited to several countries of the tropical areas. The only epidemic of CHIKV that aroused outside the tropical areas was the small epidemic outbreak occurred in the Emilia Romagna region, Italy, during summer of 2007. Local transmission has been made possible by the enormous population of *Aedes albopictus*. On the basis of these facts, a serological screening of chikungunya fever was initiated by Centro Riferimento Regionale Emergenze Microbiologiche (CRREM) of Bologna to determine the specific CHIKV IgG and IgM titres in confirmed CHIKV case.

Methods: Serum obtained from the 172 CHIKV infected persons were collected and tested for the presence of CHIKV antibodies. Specific antibodies titres were analyzed by an indirect immunofluorescence assay for the detection of anti-CHIKV IgG and IgM by using a commercial EUROIMMUN assay.

Results: During the outbreak occurred in Emilia-Romagna on 2007, all serum from laboratory confirmed CHIKV infections were collected and tested as follows. Of these samples, 108 (62,8%) were CHIKV positive both in IgM and IgG, 27 (15,6%) were only IgM positive, 12 (6,9%) were IgG positive only. In opposite, 25 (14,5%) were negative both for IgM and IgG, but tested PCR positive. Moreover the 71,4% of the IgM positive samples had a titre comprised between 1/100 and 1/1600. In addition the 85,8% of the IgG positive samples had a titre ranging from 1/100 to 1/6400.

Conclusion: Here we report the first sero-prevalence study for specific CHIKV-antibodies in a population outside the tropical geographic areas. In addition, this study was performed on all the autochthonous CHIKV infected persons. The results obtained clearly demonstrated the high level of antibody response to CHIKV in the acute phase, or immediately after, infection. Studies are presently on going in order to define the persistence of CHIKV specific antibodies.

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Sero-prevalence of West Nile virus in north-eastern Italy

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Background: West Nile virus (WNV) is a member of the flavivirus family and is transmitted in natural cycles between birds and mosquitoes, particularly *Culex* spp. Human and horses are susceptible but dead-end hosts. Firstly identified in tropical Africa, WNV infection has been evidenced in northern Africa, Israel, India and Australia. WNV spread in America since 1999 and has been the cause of outbreaks and sporadic cases in central eastern and Mediterranean Europe for more than 45 years. Of people infected with mosquito-borne WNV, 80% develop asymptomatic infections, 20% develop symptomatic infections and <1% develop severe neuro-invasive disease. The first human cases of neuro-invasive WNV infection was identified in 2008 near Ferrara province where had been identified several WNV-positive horses and birds. After this first case of WNV infection in Emilia-Romagna, a sero-epidemiological survey was started to ascertain the sero-prevalence of specific antibodies in the blood donor population and the relative risk in population.

Methods: Serum obtained from 10.000 blood donors resident in Ferrara province were collected between September 2008 to April 2009, and tested for specific WNV. Virus-specific IgG were detected in serum specimens by enzyme-linked immunosorbent assay (ELISA). To confirm results of positive IgG samples and to determine the effectively titers in the serum, an Immuno Fluorescent assay (IFA) was performed.

Results: Between a period of 8 months, since autumn 2008, 10.000 serum obtained by blood donors in Ferrara province were collected and tested as described in previously. 70 of the 10.000 serum analyzed resulted positive in IgG. This data showing an incidence of 0.7% in a blood donors population.

Conclusion: After the outbreak of WNV infections in Italy during the 2008, a sero-prevalence study was performed to determine the WNV mosquitoes-related infections in a blood donors in Italy. We report the first study of human sero-prevalence in Europe involving a high number of persons. The first data of the study show an incidence of 0,7% and suggest the large diffusion of WNV in the area studied. In addition, the high incidence prospect a necessary surveillance in blood and organ donors, performed by NAAT in this part of Italy.

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A retrospective laboratory analysis of clinically diagnosed Lassa fever cases in a tertiary hospital in Nigeria

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