Autochthonous chikungunya virus transmission may have occurred in Bologna, Italy, during the summer 2007 outbreak

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In Italy, a national surveillance system for chikungunya fever coordinated by the National Public Health Institute has been in place since August 2006. In summer 2007, an outbreak of chikungunya fever affected the Italian provinces of Ravenna, Cesena-Forli and Rimini [1-3]. As of 16 December 2007, health authorities identified 214 laboratory-confirmed cases with date of onset from 15 July to 28 September 2007. Most cases (161) occurred in the two neighbouring villages of Castiglione di Cervia and Castiglione di Ravenna, but limited local transmission also took place in the city of Ravenna, Cesena, Cervia, and Rimini. In September 2007, two confirmed cases (two women aged 68 and 70) were reported among residents of the city of Bologna (373,026 inhabitants). Both had a history of travel in the affected areas (municipality of Cervia). No unusual increase in the density of Aedes albopictus mosquitoes in the Bologna area was noted at that time (September).

On 17 December 2007, the Regional Health Authority of Emilia-Romagna reported that three further residents of Bologna had tested positive for IgG and IgM antibodies against chikungunya virus by using a commercially available immunofluorescence test performed in Bologna on 14 December on blood samples taken on 5 December. Confirmation from the national laboratory at the National Public Health Institute is pending. The three patients (two women aged 78 and 79, and a boy aged 14) had developed fever, arthralgia and rash on 7, 18 and 23 September respectively, but had not been identified as suspected cases of chikungunya fever at that time. Blood samples were taken as one patient complained of persisting joint pain and the other two had similar symptoms.

All three patients lived on the first floor of the same building, with a garden. The building is 2.5 km from the closest previously identified cases with a travel history to Cervia, reported in September. According to direct interviews, these three patients did not visit or stay in the area of the two imported cases, and vice versa. In addition, none of these last three cases reported having been abroad or having visited the affected areas at the time of the outbreak.

As these cases remained undetected at an early stage, no specific vector control measures were implemented in their premises. However, monthly routine preventive measures in Bologna from April to October included the use of larvicide in public areas. The apartment block was not considered a “public area” for larvicide treatment.

This finding suggests that transmission may have occurred 75 km away from the initial cluster. This could be explained by the importation of the virus in the area where the three cases live through an undetected (asymptomatic) viraemic patient. Another possible explanation is passive vector mobility (e.g. infected mosquitoes transported by car from the initial cluster), since the flight range (active mobility) is usually considered to be less than 1 km. The sensitivity of the surveillance system relies on the continued dissemination of information to physicians regarding the clinical symptoms (i.e. fever and severe arthralgia) that should prompt laboratory investigation for chikungunya virus infection. The present report highlights the need for reinforcing information and surveillance.

References

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