

## Outbreak report

# CASES OF CHIKUNGUNYA FEVER IMPORTED FROM THE ISLANDS OF THE SOUTH WEST INDIAN OCEAN TO PARIS, FRANCE

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An outbreak of chikungunya fever has been occurring in the islands of the South West Indian Ocean since early 2005. We describe the clinical and biological manifestations observed in 80 patients presenting with confirmed imported chikungunya fever in our infectious disease department between March 2005 and August 2006. Forty-eight patients were women (60%) and the median age was 50 years (range: 15-75). Median delay between onset of symptoms and consultation was 35 days (range: 2 days-9 months). All patients suffered from fever and joint pains. The median duration of fever was three days (range: 1-7). Joint pains were mainly peripheral, involving wrist, ankles and phalanges in more than 70% of the patients. An erythematous exanthema occurred in 60 patients (75%). Bleeding from the nose or gums was reported in nine patients (11%). Blood test anomalies, including lymphopenia, thrombopenia and moderate increased liver transaminase levels, were observed particularly during the first week of symptoms. After the first week of symptoms, the main complaints were persistent arthralgia, peripheral oedema, lethargy and sadness. At the time of this report, the treatment remains exclusively symptomatic and no vaccine is available which emphasises the leading part played by anti vectorial measures.

### Introduction

An outbreak of chikungunya fever is occurring in the islands of the South West Indian Ocean since early 2005. The first cases of this outbreak were reported in the Comoros islands, then in the Seychelles, Mauritius, and Réunion, which is a French overseas department, in March 2005. The number of cases in Réunion increased dramatically with the onset of the southern hemisphere summer in December 2005 [1]. The cumulative number of cases in Réunion was estimated at 266,000 in September 2006 [2]. Chikungunya outbreaks have been reported in Africa and Asia since the first isolation of chikungunya virus in Tanzania in 1953 [3].

The objective of this study was to describe clinical and biological manifestations observed in patients presenting with confirmed imported chikungunya fever in the Department of Infectious Diseases at the Pitié-Salpêtrière Hospital in Paris, France, from March 2005 to August 2006.

### Method

We prospectively included adult patients who had recently returned from travel abroad before presenting to our infectious disease department between March 2005 and August 2006, with signs suggestive of chikungunya fever (fever, painful, debilitating joint pain and rash) and serological confirmation by detection of chikungunya IgM, after travel to any island of the South West Indian Ocean. Infection was confirmed by an immunocapture

ELISA derived from a yellow fever test by using a goat anti-human IgM antibody, an inactivated cell-culture-grown chikungunya virus and a mouse anti-chikungunya hyperimmune ascitic fluid, and a horseradish peroxidase-labelled anti-mouse IgG conjugate. The following data were collected: age, sex, travel destination, date of onset, clinical signs and biological features.

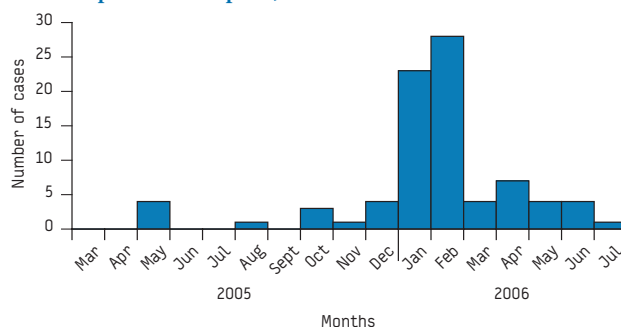
### Results

From March 2005 to August 2006, 80 travellers with confirmed chikungunya infection were seen in our department [Figure]. Forty-eight patients were women (60%) and the median age was 50 years (range: 15-75). Two women were pregnant. Fifty-two patients returned from the French island of Réunion (65%); 18 from Mauritius (22.5%); four from Comoros (5%); three from Madagascar (3.7%); two from Mayotte (2.5%) and one from India (1.2%). Thirty-seven patients were tourists living in the Paris area (46%); 28 were islanders who had settled in France and were returning from visiting family members (35%); 13 were current residents of the islands or of India (16 %) and two were islanders living in France who had returned home for business (2%). The median duration of stay (except for current residents) was 25.5 days (range: 2-224). Signs and symptoms appeared during the stay in 66 patients (82%). For the remaining 14 patients, clinical complaints occurred during the week after their return. Median delay between onset of symptoms and consultation was 35 days (range: 2 days-9 months).

All patients suffered from fever and joint pain. The median duration of fever was three days (range: 1-7 days). Joint pains were mainly peripheral, involving wrists, ankles and phalanges in more than 70% of the patients. Total duration of joint pain or duration

### FIGURE

Imported cases of chikungunya by month of onset, Pitié-Salpêtrière Hospital, France 2005-2006



of work interruption was unknown for all patients, but 38 patients (47%) were seen after six weeks of arthralgia. An erythematous exanthema occurred in 60 patients (75%) without any bullous complication or sequelae. Bleeding from the nose or gums was reported in nine (11%). Encephalitis, meningitis, and severe liver disfunctions were not seen and none of the patients required intensive care. Blood test anomalies, consisting of lymphopenia, thrombopenia and increased liver transaminase levels (inferior to three times the normal value) were observed, particularly during the first week of symptoms. After the first week of symptoms, the main complaints were persistent arthralgia, peripheral oedema, lethargy and sadness. Joint pain was treated symptomatically using paracetamol and/or non-steroidal anti-inflammatory drugs. Two patients were treated with steroids.

### Discussion

The word 'chikungunya' means 'that which bends up' in Swahili, in reference to the stooped posture of patients afflicted with the severe joint pain associated with this disease. The diagnosis is made with evocative symptoms in a patient living in or coming back from an area where there is a known outbreak of chikungunya fever, and laboratory confirmation is made by PCR or serology.

In Réunion, chikungunya and dengue virus cocirculate and share the same arthropod vectors (*Aedes albopictus*) [4]. Despite similar symptoms, especially during the first week, persistent symptoms after chikungunya infection confirmed by positive results on available serological tests are not currently suggestive of misdiagnosis or simultaneous coinfection, as previously described [5,6]. Furthermore, among the six arthropod-borne viruses of the Alphavirus genus which produce similar symptoms, consisting of fever, arthralgia and rash (Ross River, Barmah Forest, o'nyong nyong, Sindbis, chikungunya and Mayaro viruses), chikungunya is the only one which has been isolated in Réunion [7].

None of the neurological or liver complications reported in the Réunion epidemic were seen in our patients and clinical manifestations were very similar to those described in a previous study [8]. Long lasting arthralgias (weeks to months) induce repeated work absences and a period of desperation among patients.

The mosquito vector *Aedes albopictus* has spread to all continents and was first detected in Europe in Albania (1979) and in Italy (1990). The first record of *A. albopictus* in metropolitan France was reported in 1999 [9]. The international shipping trade of used tyres seems to provide a major mechanism of dissemination. In our days, *A. albopictus* represents a real threat to Mediterranean countries where climatic conditions are appropriate for its establishment [10].

The present epidemic in South West Indian Ocean emphasises the theoretical risk of imported cases of chikungunya due to patients in the viremic stage arriving in European *A. albopictus* geographical area. The risk of chikungunya implantation in southern Europe remains theoretical.

Several European countries are reporting cases of chikungunya infection imported in people returning from islands of the South West Indian Ocean with the majority of these reported in France where more than 307 cases have been detected (11). Other countries where imported cases have been reported include Germany, Belgium, United Kingdom, Czech Republic and Norway. Considering the risk of transmission of chikungunya (and other vector-borne viruses, such as dengue virus) to Europe, recommendations have recently been announced and should be embraced by travellers and health care providers alike [11].

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