

Rapid communications

CHIKUNGUNYA INFECTION CONFIRMED IN A BELGIAN TRAVELLER RETURNING FROM PHUKET (THAILAND)

E Bottieau (ebottieau@itg.be)¹, M Van Esbroeck¹, L Cnops¹, J Clerinx¹, A Van Gompel¹

1. Department of Clinical Sciences, Institute of Tropical Medicine, Antwerp, Belgium

Chikungunya infection has been increasingly reported in international travellers following its epidemic re-emergence in the Indian Ocean islands in 2006 and its spread to southern Asia thereafter. We describe the first case of chikungunya in a Belgian traveller returning from Phuket, Thailand and discuss the potential implications of chikungunya cases imported to European countries for patient management and public health.

Introduction

Chikungunya is a tropical arboviral disease transmitted by mosquitoes belonging to the genus *Aedes*. Infection is characterised by an acute-onset fever, rash and incapacitating joint pain. Chikungunya virus belongs to the *Alphavirus* genus of the family *Togaviridae*, and was first isolated in Tanzania in 1953 [1]. Although periodic outbreaks occurred ever since throughout Africa as well as in southeast Asia, they were typically self-limiting and rarely had a broad geographic extension. After a long period of quiescence, chikungunya re-emerged in 2004 on the coast of Kenya and hit the islands of Comoros and Réunion in 2005, where high attack rates and large epidemics were reported. It spread then in a sweeping succession of outbreaks to other islands of the Indian Ocean and reached India in 2006 where more than 1,000,000 suspected cases were reported [1]. In the following years, Sri Lanka, Indonesia, Singapore and Malaysia were successively affected, including the south of Thailand in the late 2008. Since January 2009, more than 20,000 cases have been reported in Thailand, with evidence of spreading to the northern provinces [2]. We describe here the case of a Belgian traveller who presented in our centre with a chikungunya infection after having stayed exclusively in the popular tourist destination of Phuket (Thailand).

Case report

A Belgian woman in her forties presented in mid April 2009 at the travel clinic of the Institute of Tropical Medicine, Antwerp, Belgium with symptoms of recurrent high-grade fever (up to 39°C), headache, generalised muscle aches and skin rash for the last four days. She had returned two days before from a holiday trip to Thailand where she had stayed exclusively in Phuket for 14 days. She had consulted in a hospital in Phuket when the symptoms started and a dengue NS1 antigenic test was performed and reported as negative. In our centre, the patient presented with a slight macular skin rash on the trunk and limbs and a slightly swollen right ankle. Laboratory tests at the time of presentation showed a leucopenia (2.290 WBC/ μ L), a borderline thrombocytopenia (138.000 platelets/ μ L) and elevated alanine aminotransferase

(78 IU/L; normal 9-52 IU/L), aspartate aminotransferase (81 IU/L; normal 14-36 IU/L) and lactate dehydrogenase (742 IU/L; normal 313-618 IU/L). Blood smears for malaria and blood cultures were negative. Dengue fever was considered to be the most likely diagnosis.

Fever decreased the day following the consultation, but during the next two-three weeks, the patient developed severe joint aches in the feet, fingers and right wrist without evident swelling. Paired serology against dengue remained negative, as well as testing for leptospirosis, rickettsiosis, Q fever, West Nile virus, *Toxoplasma gondii* and cytomegalovirus. Chikungunya was considered as a differential diagnosis and serology by indirect immunofluorescence, adapted from Panning et al. (2008) [3], revealed a more than 4-fold increase of immunoglobulin (Ig) G titres against chikungunya (from 1/16 to 1/256 within 14 days). A real-time polymerase chain reaction testing, adapted from Panning et al. [3], of the acute-phase serum taken upon the first presentation in our clinic, was positive for the chikungunya virus (cycle threshold-value 33.48), while the serum sample taken 14 days later was negative. The patient fully recovered, but joint pain persisted until the beginning of June despite symptomatic treatment.

Upon receipt of the positive test result, national and regional health authorities were notified. A specific project called "Emerging Threats" has been indeed established in the Scientific Institute of Public Health of Belgium since September 2008. Its main objective is to implement a national surveillance for tick-borne encephalitis, West Nile fever and chikungunya. Our laboratory, which is the national reference centre for tropical diseases, takes part in this project by reporting monthly all serological and/or molecular diagnoses of West Nile and chikungunya infection.

Discussion and conclusion

Following the successive waves of outbreaks spreading from east Africa to southeast Asia, chikungunya infection has been reported increasingly in returning western travellers or immigrants returning from visits to their home countries during the last couple of years [3-8]. In Belgium for example, 54 cases of chikungunya have been confirmed since 2006 (38 in 2006, 9 in 2007, 7 in 2008) mainly in travellers returning from countries with recent epidemics such as Mauritius (n=17), Réunion Island (n=10), Sri Lanka (n=4), Madagascar and India (n=3 for each) [unpublished data]. Compared to this, approximately 50 imported cases of dengue are diagnosed every year in our country, mainly acquired in southeast Asia/western

Pacific and Latin America, with Thailand, Indonesia and India being the leading countries of infection [9]. To our knowledge, this is the first imported case in Europe of chikungunya acquired undoubtedly in Phuket, Thailand. Our observation is worth reporting because this region is probably one of the most popular travel destinations in southeast Asia. We therefore expect that significant numbers of susceptible travellers might become infected in Phuket. This would result in an increase of symptomatic travellers returning from this area attending the travel or primary care settings in various western countries and make chikungunya an important differential diagnosis in these patients.

We demonstrated recently that the pre-test probability for a traveller returning from southern Asia with fever to be diagnosed with dengue was about 15% [10]. If a skin rash, a leucopenia and a thrombocytopenia are present like in the case under discussion here, with respective adjusted positive likelihood ratios of 2.8, 3.3 and 2 [10], the post-test(s) probability for dengue rises above 50%, explaining why this was the foremost diagnosis we considered. The differentiation between chikungunya and dengue infections is often difficult [4,6]. Skin rash tends to be more frequent in chikungunya patients (75-80%) than in dengue patients (about 50%) [4-8,10]. In contrast, leucopenia and thrombocytopenia seem to occur rather similarly in both diseases, although no large comparative series have been published so far. In our case, joint symptoms became prominent during the course of the disease [7,8] and paired serology against dengue remained negative. This encouraged us to look for chikungunya as an alternative diagnosis which was ultimately confirmed by further serological and molecular investigations.

Potential implications for Europe

Besides the implications for managing individual patients, chikungunya has a potential for autochthonous transmission in Europe. This was amply demonstrated by the outbreak of chikungunya in Italy in the summer of 2007, presumably triggered by a viraemic index case – an Indian traveller returning from a visit to friends and relatives in India [11,12]. Local transmission was made possible by the presence of the receptive vector, *Aedes albopictus*, in Italy. This vector is established in other southern European countries as well, but not in Belgium so far although it has been sporadically introduced [13]. However, several models with different climate change scenarios predict a further spread of *A. albopictus* to northern Europe and consider parts of Belgium as suitable for the mosquito establishment [13]. Since the vector is sporadically introduced and might be established in Belgium in the future and since both chikungunya and dengue viruses are diagnosed repetitively in returning travellers, the risk for local epidemics, although extremely limited now, is likely to increase.

In conclusion, we have observed a case of dengue-like illness finally diagnosed as chikungunya infection and acquired in Phuket, Thailand. Phuket is a popular tourist spot in southeast Asia, increasing the likelihood of further imported cases in western countries while the local epidemic in Thailand is ongoing. Despite the similarity with dengue features, chikungunya infection should be recognised early in returning travellers because of its specific protracted morbidity and its potential for local outbreaks in European countries.

References

1. Pialoux G, Gaüzère BA, Jauréguiberry S, Strobel M. Chikungunya, an epidemic arbovirolos. *Lancet Infect Dis.* 2007;7(5):319-27.
2. ProMED-mail. Chikungunya: Thailand. Archive Number: 20090527.1975, 27 May 2009. Boston US: International Society for Infectious Diseases. Available from: <http://www.promedmail.org>
3. Panning M, Grywna K, Van Esbroeck M, Emmerich P, Drosten C. Chikungunya fever in travelers returning to Europe from the Indian Ocean region, 2006. *Emerg Infect Dis.* 2008;14(3):416-22.
4. Beltrame A, Angheben A, Bisoffi Z, Monteiro G, Marocco S, Calleri G, et al. Imported Chikungunya Infection, Italy. *Emerg Infect Dis* 2007;13(8):1264-6.
5. Hochedez P, Jauréguiberry S, Debruyne M, Bossi P, Hausfater P, Brucker, et al. Chikungunya infection in travelers. *Emerg Infect Dis.* 2006;12(10):1565-7.
6. Nicoletti L, Ciccozzi M, Marchi A, Fiorentini C, Martucci P, D'Ancona F, et al. Chikungunya and dengue viruses in travelers. *Emerg Infect Dis.* 2008;14(1):177-8.
7. Simon F, Parola P, Grandadam M, Fourcade S, Oliver M, Brouqui P, et al. Chikungunya infection: an emerging rheumatism among travelers returned from Indian Ocean islands. Report of 47 cases. *Medicine (Baltimore).* 2007;86(3):123-37.
8. Taubitz W, Cramer JP, Kapaun A, Pfeffer M, Drosten C, Dobler G, et al. Chikungunya fever in travelers: clinical presentation and course. *Clin Infect Dis.* 2007;45(1):e1-e4.
9. Scientific Institute of Public Health of Belgium, Epidemiology Unit. Annual Reports on Infectious Diseases, Dengue. [in Dutch]. Brussels. Available from: http://www.iph.fgov.be/epidemio/epinl/plabnl/plabannl/07_denn_n.pdf
10. Bottieau E, Clerinx J, Van den Enden E, Van Esbroeck M, Colebunders R, Van Gompel A, et al. Fever after a stay in the tropics: diagnostic predictors of the leading tropical conditions. *Medicine (Baltimore).* 2007;86(1):18-25.
11. Angelini R, Finarelli AC, Angelini P, Po C, Petropulacos K, Macini P, et al. An outbreak of chikungunya fever in the province of Ravenna, Italy. *Euro Surveill.* 2007;12(36):pii=3260. Available from: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=3260>
12. Rezza G, Nicoletti L, Angelini R, Romi R, Finarelli AC, Panning M, et al. Infection with chikungunya virus in Italy: an outbreak in a temperate region. *Lancet.* 2007;370(9602):1840-6.
13. European Centre for Disease Prevention and Control (ECDC). Development of *Aedes albopictus* risk maps. Stockholm: ECDC; 2009. Available from: http://www.ecdc.europa.eu/en/files/pdf/Publications/0905_TER_Development_of_Aedes_albopictus_risk_maps.pdf

This article was published on 25 June 2009.

Citation style for this article: Bottieau E, Van Esbroeck M, Cnops L, Clerinx J, Van Gompel A. Chikungunya infection confirmed in a Belgian traveller returning from Phuket (Thailand). *Euro Surveill.* 2009;14(25):pii=19248. Available online: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19248>