THREAT ASSESSMENT BRIEF

Oropouche virus disease cases imported into the European Union

9 August 2024

Summary

Epidemiological situation

In June and July 2024, 19 imported cases of Oropouche virus disease were reported for the first time in EU countries: Spain (12), Italy (5), and Germany (2). Eighteen of the cases had a travel history to Cuba and one to Brazil. Oropouche virus disease is a zoonotic disease caused by the Oropouche virus (OROV). To date, outbreaks of OROV disease have been reported in several countries across South America, Central America and the Caribbean. During 2024, outbreaks have been reported in Brazil, Bolivia, Colombia, Peru, and more recently in Cuba. Oropouche virus is mainly transmitted to humans as a result of being bitten by infected midges, however some mosquitoes species can also spread the virus. The principal vector (*Culicoides paraensis* midge) is widely distributed across the Americas, but absent in Europe. To date, there has been a lack of evidence as to whether European midges or mosquitoes could transmit the virus. Oropouche virus disease can manifest as an acute febrile illness with headache, nausea, vomiting, muscle and joint pains, and occasionally more severe symptoms. The prognosis for recovery is good and fatal outcomes are extremely rare. There are no vaccines to prevent or specific medication to treat OROV disease. Direct, horizontal, human-to-human transmission of the virus has not been documented so far. Recently, the Brazilian Ministry of Health reported six possible cases of OROV disease being passed from mother-to-child during pregnancy. The potential risk during pregnancy and fetopathic effects of OROV infection are still under investigation and have not been confirmed.

Risk assessment

The likelihood of infection for EU/EEA citizens travelling to, or residing in epidemic areas in South and Central America is currently assessed as moderate. The likelihood of infection increases if travellers visit the more-affected municipalities of the northern states of Brazil and/or the Amazon region, and/or if personal protection measures are not taken. Given the good prognosis for recovery, the impact is assessed as low. The risk of infection for EU/EEA citizens travelling to OROV-epidemic countries in the Americas is therefore assessed as moderate.

Recent data indicate that OROV infection in pregnant women may lead to miscarriage, abortion and/or developmental problems, and deformities of the foetus. The impact of OROV infection for pregnant women, foetuses and newborns could therefore be higher than for the general population, although this is still under investigation.

The likelihood of human exposure to OROV in the EU/EEA is considered very low, despite the possible importation of further OROV disease cases, as the competent vectors commonly described in the Americas are absent from continental Europe, and to date, no secondary transmission has ever been reported. Therefore, the risk of locally-acquired OROV disease in the EU/EEA is low.

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Recommendations

Personal protective measures to reduce the risk of bites in epidemic areas include the use of repellent in accordance with the instructions indicated on the product label, wearing long-sleeved shirts and long trousers and using insecticide-treated fine mesh mosquito bed nets when resting. These measures are essential to provide protection against bites in rooms that are not adequately screened (with fine-mesh screens on doors and windows) or air-conditioned, and during outdoor activities.

Symptoms of OROV disease can be similar to other arboviral infections, such as dengue, chikungunya or Zika. The early detection of travel-associated cases can be enhanced by an increasing awareness among health professionals of travellers returning from areas with active OROV transmission, and adequate laboratory diagnostic capability, recently supported by the EVD-LabNet for laboratory network members in the EU/EEA. Laboratory testing for OROV should be performed when other tests for diseases of common aetiology (e.g. dengue, chikungunya or Zika) are negative. In addition, travel medicine clinics should inform travellers to epidemic areas of the risks related to the disease and protective measures that can reduce the likelihood of infection. In addition, public health authorities should report new cases of OROV infection through Epipulse to enable a continuous assessment of the situation.

Due to the potentially high impact of congenital OROV infection, pregnant women planning to travel to epidemic countries where transmission is ongoing or has been reported should be provided with comprehensive information on the potential risk associated with OROV infection and prevention strategies. Areas affected by OROV are also classified as countries and territories with current or previous Zika virus (ZIKV) transmission, and travel advice for pregnant women related to ZIKV can also adequately address the potential risk associated with Oropouche virus disease.

Epidemiological situation

Oropouche virus disease is a zoonotic disease caused by the Oropouche virus (OROV) (*Orthobunyavirus oropoucheense*) with a sylvatic (forested areas) and an urban transmission cycle [1]. Outbreaks of OROV disease in humans have been reported in several countries in South America (e.g. Argentina, Bolivia, Brazil, Colombia, Peru), Central America (e.g. Panama) and the Caribbean (e.g. Trinidad and Tobago) [2,3]. In the urban transmission cycle, the principal vector of the virus is the *Culicoides paraensis* midge, which is widely distributed in the Americas, but absent in Europe. Possible other vectors of OROV include the mosquito species *Culex quinquefasciatus* (in the urban cycle) and *Coquillettidia venezuelensis*, *Mansonia venezuelensis*, and *Aedes serratus* (in the sylvatic cycle). However, the evidence for their vector competence is limited [3-5]. Wild mammals (e.g. sloths, non-human primates, rodents) and birds are considered to be the natural hosts of OROV. In humans, OROV disease can manifest as an acute febrile illness with headache, nausea, vomiting, muscle and joint pains, and occasionally more severe symptoms (e.g. haemorrhages, neurological symptoms, and meningitis) [6,7]. The overall prognosis for recovery is good and fatal outcomes are extremely rare. Treatment for OROV disease is supportive. There are no vaccines to prevent or specific medication to treat Oropouche. Direct, horizontal, human-to-human transmission of the virus has not been documented so far. However, vertical transmission of OROV has recently been demonstrated and the potential fetopathic effect of OROV infection is being investigated [8,9].

OROV disease outbreaks have been reported in the Americas since at least 1961 [2]. Retrospective studies and outbreak investigations have identified OROV disease cases, mainly in the Amazon region in Colombia during the period 2019–2022 [10], Peru in 2016 [11], and French Guiana in 2020 [12].

Epidemiological situation in South America and the Caribbean in 2024

In 2024, OROV disease cases have been reported in South America and the Caribbean. On February 2024, the Pan American Health Organization (PAHO) issued an epidemiological alert concerning increasing reports of OROV disease cases in Brazil, Colombia, and Peru [13]. Following this alert, Cuba reported the first ever confirmed cases of Oropouche virus disease in the country in late May 2024 [14].

Since January 2024, and as of mid-July, 8 078 confirmed OROV disease cases have been reported in the Americas from Brazil (7 284), Bolivia (356), Peru (290), Colombia (74), and Cuba (74). Two deaths have been reported in 2024 from Brazil. Confirmed OROV disease cases in the Americas peaked in January 2024, showing a decreasing trend until late July [15]. In Brazil, although most of the confirmed cases in 2024 have been reported in the Amazon region, ten non-Amazonian states have reported autochthonous transmission, including Bahía (831), Espírito Santo (420), Santa Catarina (165), Pernambuco (92), Minas Gerais (83), Rio de Janeiro (64), Ceará (39), Piauí (28), Maranhão (19), and Mato Grosso (17). In Bolivia, up to 75.3% of the cases were detected in La Paz department (268). In Peru, cases have been reported in five departments Loreto (193), Madre de Dios (47), Ucayali (41), Huánuco (8), and Tumbes (1). In Colombia, confirmed OROV disease cases have been reported in Amazonas (70), Caquetá (1), and Meta (1) departments [15]. In Cuba, as of June 24, cases have been reported in Cienfuegos, Ciego de Ávila, Guantánamo, Holguín, Matanzas, Mayabeque, Sancti Spíritus, Santiago de Cuba, and Villa Clara [16].

Imported cases in the EU

Nineteen imported OROV disease cases have been reported in EU countries so far: in Spain (12), Italy (5), and Germany (2) between the beginning of June and the end of July 2024. Eighteen cases reported recent travel to Cuba, with the earliest reported case reporting symptoms on 26 May 2024. One case reported by Italy had travel history to Brazil. This case was retrospectively detected after presenting symptoms in March 2024 [17].

ECDC risk assessment for the EU/EEA

What is the risk related to Oropouche virus disease for EU/EEA citizens travelling to or residing in epidemic areas?

The likelihood of infection for EU/EEA citizens travelling to or residing in epidemic areas is currently assessed as moderate, considering the relatively high number of cases reported in the Americas (though decreasing) and the unknown situation in Cuba, from where most of the cases have been imported into the EU since June 2024. This is provided that travellers follow the instructions of public health authorities on the use of personal protection measures against midge and mosquito bites. The likelihood of infection may increase if travellers visit the more affected municipalities in the northern states of Brazil and/or the Amazon region, especially if personal protective measures are not followed. The likelihood of travellers being infected is further influenced by the current epidemiological situation at the location visited (e.g. rural/natural areas versus urban areas) and the seasonality of the disease. The impact is assessed as low for the general population, as complications seem to be rare, although they cannot be ruled out.

The risk of OROV disease for EU/EEA citizens travelling to epidemic countries in the Americas is therefore assessed as moderate.

What is the risk for pregnant women, foetuses and newborns?

Recent data indicate the possibility that OROV infection in pregnant women may lead to miscarriage, abortion and/or developmental problems, and deformities of the foetus. Other orthobunyaviruses that are closely related genetically (e.g. the Schmallenberg virus, the Akabane disease virus) can cause abortions and foetal deformities in animals. However, these viruses have never been shown to infect humans. Nevertheless, given the experiences in ruminants, it would not be completely unexpected for the fetopathic effects of OROV infections shown in recent data to be confirmed over time.

Therefore, the impact of OROV infection for pregnant women, foetuses and newborns could be higher than for the general population, although this is still under investigation.

What is the risk of Oropouche virus disease in the EU/EEA?

The likelihood of human exposure to OROV in the EU/EEA is considered very low, despite the expected importation of further and travel-associated OROV disease cases, as the competent vectors commonly described in the Americas are absent from continental Europe, and to date, no secondary transmission has been reported. However, the possibility of the virus being transmitted by other vectors present in Europe cannot be ruled out. The impact of infection is considered low for the general population, as complications are rare. Therefore, the risk of locally-acquired OROV disease in the EU/EEA is low.

ECDC recommendations

Recommendations to travellers

For people travelling to affected areas, the risk of becoming infected is probably greatest if bitten by an infected *Culicoides paraensis,* a midge which bites during the day and readily enters houses, with peaks in activity after sunrise and before sunset. Personal protective measures to reduce the risk of bites, both when undertaking outdoor activities and inside houses that are not adequately screened (with fine-mesh screens on doors and windows) or air-conditioned, include the use of repellent in accordance with the instructions indicated on the product label and wearing long-sleeved shirts and long trousers. In addition, insecticide-treated fine mesh mosquito nets should be used when resting.

Despite a lack of clear evidence, due to the potential high impact of congenital OROV infection, pregnant women should be provided with comprehensive information on the risk associated with OROV infection and prevention strategies. Pregnant women planning to travel to epidemic countries where transmission is ongoing or has been reported should always seek pre-travel health advice to assess the risk of infection based on the local situation. They should also pay strict attention to personal protective measures against midge and mosquito bites, should they chose to travel. Although the potential fetopathic effect of OROV infection has not been confirmed yet, it is important to keep in mind that the areas affected by OROV are also classified as countries and territories with current or previous Zika virus (ZIKV) transmission [18,19]. Travel advice for pregnant women visiting areas with current or previous ZIKV transmission should also address the potential risk associated with OROV disease.

Recommendations to public health professionals

Increased awareness among health professionals of travellers returning from areas with active OROV transmission, combined with adequate laboratory diagnostic capability is essential for the early detection of travel-associated cases. Symptoms of OROV disease can be similar to other arboviral infections, such as dengue, chikungunya, or Zika. Support in building laboratory diagnostic capabilities for the detection of OROV infections has been provided by the EVD-LabNet to laboratory network members in the EU/EEA. Laboratory testing for OROV should be performed when other tests for diseases of common aetiology (e.g. dengue, chikungunya or Zika) are negative. Travel medicine clinics should inform travellers to epidemic areas of the risks related to the disease and protective measures to reduce the likelihood of infection. Finally, public health authorities should report new cases of OROV infection through Epipulse, including a detailed clinical picture and possible related complications, to enable a continuous assessment of the situation. They should also encourage the conducting of studies on vector competencies in the European region.

Limitations

Although OROV disease is one of a number of frequently occurring human arboviral diseases in southern and central America, several aspects of OROV ecology are not well known, including natural hosts, vectors and environmental drivers of disease epidemiology. The recent data on the geographical expansion of affected areas, the unprecedented number of cases and the reports of severe clinical manifestations may indicate changing features of the disease. Climatic factors are hypothesised as drivers of disease ecology and recent reports on the emergence of a reassortant strain, with higher viral fitness, may also influence the epidemiology of OROV disease in the Americas. New scientific data and findings (particularly on the suspected fetopathic effect of virus infection) may require a revision of this assessment.

There is lack of evidence as to whether European midge or mosquito species could transmit the virus. Potential vectors in the EU/EEA are unknown, and whether the environmental conditions are suitable for vector-borne transmission of the virus in continental Europe. The current assessment is based on the assumption that the presence of competent vectors and the establishment of sustained transmission chains in the EU/EEA is unlikely. Finally, based on actual knowledge of the disease, other routes of transmission (e.g. sexual or through substances of human origin) cannot be ruled out.

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