THREAT ASSESSMENT BRIEF

Oropouche virus disease cases imported to the European Union

9 August 2024

Summary

Epidemiological situation

From June to July 2024, ten imported cases of Oropouche virus disease have been reported for the first time in EU countries, in Italy (5), Spain (3) and Germany (2). Nine of those cases had a travel history to Cuba and one case to Brazil. Oropouche virus disease is a zoonotic disease caused by the Oropouche virus (OROV). Outbreaks of OROV disease have been reported in several countries in 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 spread to people mainly by the bite of infected midges, some mosquitoes species can also spread the virus. The principal vector (*Culicoides paraensis* midge) is widely distributed in the Americas but absent in Europe. To date, there is lack of evidence as to whether European midge or mosquito species could transmit the virus. Oropouche virus disease can manifest as an acute febrile illness with headache, nausea, vomiting, muscle and joint pains, occasionally with more severe symptoms. The prognosis for recovery is good and fatal outcome is 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 Brazil Ministry of Health reported six possible cases of OROV disease being passed from mother-to-child during pregnancy. The potential risk during pregnancy and foetopathic effect 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 the epidemic areas in South and Central America is currently assessed as moderate. The likelihood of infection would increase 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. The impact is assessed as low considering the good prognoses for recovery. 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 might lead to miscarriage, abortion and/or developmental problems, and deformities of the foetus. Therefore, the impact of OROV infection for pregnant women, foetuses and newborns could be higher than for the general population but this is still under investigation.

The likelihood of human exposure to OROV in the EU/EEA is considered very low, despite the likely importation of further OROV disease cases, as the competent vectors commonly described in the Americas

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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.

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 for providing protection from bites in rooms that are not adequately screened (with fine-mesh screens on doors and windows) or air-conditioned, and during outdoors activities.

Symptoms of OROV disease can be similar to other arboviral infections such as dengue, chikungunya, Zika, or malaria. The early detection of travel-associated cases can be enhanced by an increasing awareness among health professionals concerning travellers returning from areas with active OROV transmission, as well as by enhancing adequate laboratory diagnostic capability, recently supported by the EVD-LabNet to the laboratory network members in the EU/EEA. Laboratory testing for OROV should be performed when other tests against diseases of common aetiology would return negative. In addition, travel medicine clinics should inform travellers to the epidemic areas on risks related to the disease and protective measures to reduce the likelihood of infection, and Public Health authorities should report new cases of OROV infection through Epipulse, allowing 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 about 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 transmission cycle (in 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, occasionally with more severe symptoms (e.g. haemorrhages, neurological symptoms, and meningitis) [6,7]. The prognosis for recovery is overall good and fatal outcome is 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, recently vertical transmission of OROV has been demonstrated and the potential foetopathic 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 between 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 informing about 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 until 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 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 the 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

Ten imported OROV disease cases have so far been reported in EU countries, in Italy (5), Spain (3) and Germany (2) since the beginning of June and until the end of July 2024. Nine 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 the 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 which most of the cases were imported in the EU, since June 2024, and 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 infection of travellers is further influenced by the current epidemiological situation at the place of visit (e.g., rural / natural areas vs. urban areas) and the seasonality of the disease. The impact is assessed as low for the general population, as complications seem to be rare but cannot be ruled out.

The risk of OROV diseases 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 might lead to miscarriage, abortion and/or developmental problems, and deformities of the foetus. Genetically closely related other orthobunyaviruses (e.g., the Schmallenberg virus, the Akabane disease virus) can cause abortions and foetal deformities in animals. Those viruses have, however, never been shown to infect humans. Still, reflecting on the experiences in the ruminants, it would not be completely unexpected that foetopathic effects of OROV infections shown in recent data would get confirmed over the time.

Therefore, the impact of OROV infection for pregnant women, foetuses and newborns could be higher than for the general population but 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 can't be ruled out. The impact of infection is considered low for 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 getting infected is probably largest through a bite of an infected *Culicoides paraensis*, 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, during outdoor activities or 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, measure include using insecticide-treated fine mesh mosquito nets when resting.

Despite a present lack of clear evidence but due to the potentially high impact of congenital OROV infection, pregnant women should be provided with comprehensive information about the potential 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 foetopathic effect OROV infection has not been confirmed so far, 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 travelling to areas with current or previous ZIKV transmission should adequately also address the potential risk associated with OROV disease.

Recommendations to public health professionals

Increased awareness among health professionals concerning travellers returning from areas with active OROV transmission, combined with adequate laboratory diagnostic capability, are essential for the early detection of travel-associated cases. Symptoms of OROV disease can be similar to other arboviral infections such as dengue, chikungunya, Zika, or malaria. Support on building laboratory diagnostic capabilities for the detection of OROV infections has been provided by the EVD-LabNet to the laboratory network members in the EU/EEA. Especially, laboratory testing for OROV should be performed when other tests against diseases of common aetiology would return negative. Travel medicine clinics should inform travellers to the epidemic areas on 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 detailed clinical picture and possible related complications, to allow for a continuous assessment of the situation, and should encourage the conduct of studies on vectors' competencies in the European region.

Limitations

Although OROV disease is a frequent 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 geographic expansion of affected areas, the unprecedented number of cases and the reports on most severe clinical manifestations might indicate changing features of the disease. Climatic factors are hypothesized as drivers of disease ecology and recent reports on the emergence of a reassortant strain with higher viral fitness might also influence the epidemiology of OROV disease in the Americas. New scientific data and findings (particularly on the suspected foetopathic effect of the virus infection) might require a revision of this assessment.

There is lack of evidence as to whether European midge or mosquito species could transmit the virus. It is also unknown what potential vectors in the EU/EEA could be, and whether the environmental conditions are suitable for vector-borne transmission of the virus in the 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 substance of human origin) cannot be ruled out.

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