Oropouche virus – another emerging arbovirus from the Americas

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Sources:

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The spread of Oropouche virus (OROV) in Brazil and neighbouring countries in South and Central America, notably Peru and Panama, has been highlighted in a recent ProMed posting and in the lay press. Named after the region in Trinidad where it was first isolated from a forest worker in the 1950s, OROV (an orthobunyavirus) is thought to have caused over 500,000 clinical infections in Brazil, where it typically causes explosive urban outbreaks spread by culicoid midges. In Amazonia there is a sylvatic cycle including transmission by forest mosquitoes between hosts such as sloths and non-human primates as well as humans going into the forest. Emergence into human populations in urban areas has been associated with deforestation. Clinical features resemble those of other arboviruses with a biphasic illness including headache as prominent feature. Cases of meningitis have been reported, but no fatalities or long term sequelae. Diagnosis depends on virus detection during the first few days of illness by culture or molecular methods and by subsequent detection of neutralising antibodies. Commercial assays are not yet available. With increasing spread of infection in the Americas and increasing tourism to the same areas, it is likely that cases will be seen more frequently in Europe.

Comment

There has been increasing interest in the possible emergence of arboviral infections such as Mayaro virus and Oropouche virus in the Americas and Oropouche is currently prominent [1, 2, 3, 4]. The epidemiology and clinical features of this infection have been summarised in an excellent recent review [5].

Oropouche virus (OROV) is an orthobunyavirus that was first isolated from the blood of a charcoal worker in Trinidad in 1955, with at least 4 lineages now characterised in South and Central America [5]. It was subsequently isolated from a sloth during the construction of the Belém-Brasilia highway and has been found in marmosets and other hosts in the Amazonian forest, where a sylvatic cycle of infection is maintained by a variety of species of culicine mosquitoes. Explosive urban outbreaks of infection have been described repeatedly in Brazil and more recently in Peru, spread primarily by biting midges Culicoides paraensis, so small that they are nicknamed “no see ums”. These midges have a wide geographical distribution from Argentina up to Wisconsin and are particularly active during the rainy season. The role of mosquitoes including Aedes sp in urban spread is less clear but the common
urban vector *Culex p. quinquefasciatus* has been implicated for decades. No direct human-to-human spread has been described, but research in this area is clearly of interest after experience with Zika virus. There is no vaccine to prevent infection.

Prior to the emergence of Zika virus, OROV was thought to be the second most common arbovirus in Brazil after dengue, with over 500,000 estimated human infections in the last 6 decades. However, many of these have been diagnosed clinically. It resembles other arboviruses with a biphasic illness starting with abrupt onset of fever, myalgia, joint pains, rash, nausea and headache after an incubation period of 4-8 days. Headache was said to be more prominent and rash less prominent than dengue in early clinical descriptions [6] and lymphocytic meningitis has been described. Up to 60% of patients have a less severe second phase of symptoms a few days later. In early reports thrombocytopenia was not pronounced and liver function test abnormalities were unusual (compared to dengue) [6]. Although post-illness fatigue has been reported, no serious complications or deaths have been reported. However, in a recent case series in Manaus, Brazil, transient haemorrhagic features such as petechiae, epistaxis and gingival bleeding were seen in 15.5% of patients, other symptoms including headaches (73%), myalgia (70%), arthralgia (53%) and rash (22%) [7].

Confirmation of diagnosis relies on culture of virus in cell lines or animals or identification by PCR during the short early viraemic phase of illness (up to 4 days); or subsequent detection of neutralising antibodies by in-house assays available in research centres and some national referral laboratories. The need for alternative rapid diagnostics for rare imported infections has been highlighted by us before [8].

There has been increasing recognition of OROV infections in South and Central America outside Amazonia, including popular tourist destinations such as Cusco in Peru. As deforestation continues, the likelihood of spread of infection from sylvatic to urban settings is increased. The primary urban vector has a wide geographical range and tourism to the Americas is increasingly popular. All these features suggest that OROV will continue to spread in the Americas and will be seen (but perhaps not recognised by clinicians) more frequently in Europe.

**References**


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