



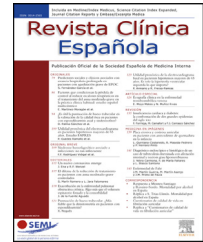
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## EDITORIAL

### Monkeypox: A poxvirus emerges once again<sup>☆</sup>

### Viruela del mono: un poxvirus emerge nuevamente



On May 21, the World Health Organization (WHO) announced the emergence of 92 confirmed cases of monkeypox in 12 countries outside of the endemic areas in central and western Africa<sup>1</sup>. Uncertainties include exactly how it has been transmitted, how widespread it is likely to become, whether it has a significant mutation from earlier strains, and if a vaccine will be necessary for control.

Monkeypox is an infection caused by the monkeypox virus, a member of the family *Poxviridae* and the genus *Orthopoxvirus*. This genus also includes the smallpox virus with its variants *Variola major* and *Variola minor*—a disease eradicated in 1980—, vaccinia virus, and cowpox virus.

Monkeypox virus was discovered in 1958 in Copenhagen when two outbreaks of pustular disease occurred in monkeys in captivity there for research<sup>2</sup>. The first human case was described in 1970 in the Democratic Republic of the Congo<sup>3</sup>. Since then, cases have been described in countries of Sub-Saharan Africa and Central Africa. Two different clades are recognized: a West African clade with more benign symptoms and a mortality rate of 1% and a Central African clade with greater severity and mortality rate of 10%<sup>4</sup>.

In a study of family outbreaks of patients with monkeypox infection in the Democratic Republic of the Congo, the risk factors for acquiring the infection were bed-sharing or using the same cutlery. No animal reservoirs could be identified<sup>5</sup>. A cluster of cases in the United States in 2003, traced to exposure to exotic pets imported from Africa, showed rodents can become infected and transmit the infection to humans<sup>6</sup>.

The infection of the animals caused necrotizing pneumonia, conjunctivitis, and mouth ulcers. In people who had close contact with infected animals and their family members, the infection caused fever, vesiculopustular rash, pharyngeal pain, myalgia, headache, and adenopathies. The incubation period was six days (range 1–11 days)<sup>7</sup>. Symptoms usually last two to four weeks. There were no deaths.

The recently described outbreak of human monkeypox virus infection showed that most cases occurred in men who have sex with men. The cases have not been severe and the clade involved is the West African variant. In Spain, around one hundred cases have been confirmed, some linked to an outbreak in a sauna in Madrid. The United Kingdom, Spain, and Portugal are the European countries with the greatest number of confirmed cases. Cases have also been described in the United States, Canada, and Australia<sup>8</sup>.

The Carlos III Health Institute (ISCIII, for its initials in Spanish) in Spain has prepared a document for the early detection and treatment of patients with monkeypox disease<sup>9</sup>. The confirmatory diagnosis is made by PCR in samples of skin lesions (vesicular fluid, exudates, or scabs). Preventive measures currently include contact (personal protective equipment) and respiratory isolation (surgical mask); use of a single room; washing clothes in a standard washing machine with detergent and water at 60 °C; use of a dishwasher or washing dishes by hand with soap; and treating contaminated surfaces or objects with a detergent or sodium hypochlorite (1:100 bleach).

Vaccination against traditional smallpox with Jynneos<sup>TM</sup>, also known as Imvamune<sup>TM</sup> or Imvanex<sup>TM</sup> (Bavarian Nordik, Denmark), demonstrates protection against monkeypox virus infection. Spain is preparing to administer this vaccine to close contacts of confirmed cases<sup>10</sup>. It is a nonreplicating live variant of the vaccinia virus, the only vaccine currently approved for the prevention of monkeypox.

The drug tecovirimat has been approved for treatment of this infection in the European Union and the United States. Cidofovir and brincidofovir are two antivirals that have shown *in vitro* activity against poxvirus, although it is not known if an infected person could benefit from this treatment. Negotiations in Spain are underway to acquire tecovirimat.

This outbreak of monkeypox virus infection is striking as it has emerged in several geographically separated countries and areas. Transmission is likely from person to person and there is no evidence that animals are involved. Although most cases have arisen in men who have sex with men, it is

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unclear whether sexual contact is necessary for transmission.

With the summer months approaching and increased social contact, it is likely that the epidemic could spread. In the meantime, we expect that sequencing of the viruses will give insights into how much identity there is among patient strains and if there are mutant variants that transmit the virus more effectively.

## Conflict of interests

The authors declare no conflicts of interest.

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J. Ena<sup>a,\*</sup>, R.P. Wenzel<sup>b</sup>

<sup>a</sup> *Departamento de Medicina Interna, Hospital Marina Baixa, Alicante, Spain*

<sup>b</sup> *Departamento de Medicina Interna, Virginia Commonwealth University Health, Richmond, VA, USA*

\*Corresponding author.

E-mail address: [ena\\_jav@gva.es](mailto:ena_jav@gva.es) (J. Ena).