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## Monkeypox virus infections in children in Spain during the first months of the 2022 outbreak

Currently, Spain has the second highest number of monkeypox cases worldwide.<sup>1</sup> As of Aug 3, 2022, 4663 laboratory-confirmed cases of monkeypox have been reported in Spain, with two patients having died of complications associated with encephalitis. Only 16 (0.3%) patients were younger than 18 years (males n=10, females n=6; table and appendix p 1), all of whom had their infection confirmed by monkeypox virus or orthopoxvirus generic real-time PCR. These 16 patients were in two age groups, with different transmission routes: four were children younger than 4 years (aged 7, 10, and 13 months, and 3 years) and 12 were adolescents aged 13–17 years (appendix pp 2–3).

In three patients in the younger age group, the transmission route was through household contact with their parents, and in one patient the transmission route was unknown. In the older age group, nine patients were infected via an outbreak in a tattoo and piercing studio, probably by contaminated material, and in three patients, transmission was via sexual close contact. All cases were considered autochthonous, and home isolation was recommended for the duration of illness. Only one (6%) of 16 patients developed an acute complication (bacterial superinfection that required drainage of an abscess), but no patient required hospital admission and all were followed up on an outpatient basis (by telephone or in person). All 16 patients survived without sequelae. This study involved the use of patient medical data from the National Epidemiological Surveillance Network (RENAVE). Individual informed consent is not required for

data to be included in RENAVE, and all data are pseudonymised, meeting all considerations regarding personal data protection. As this work is in line with alert, response, and surveillance activities, no explicit ethics assessment was required (appendix p 4).

On Aug 2, 2022, WHO reported 25 022 confirmed monkeypox cases worldwide.<sup>2</sup> Of the patients for whom information on age is available (n=16 969), 96 (0.6%) are younger than 18 years. Unlike in Spain, 42% of the patients for whom data are available required hospital admission for isolation or treatment, but similarly, there were no deaths.

During this outbreak, most cases have been identified among adult men, with transmission generally associated with sexual activity.<sup>3</sup> The

diagnosis of paediatric cases highlights the risk of broader transmission, affecting the whole community. As previously described, household contact is the most common route of transmission in children. In non-endemic countries, transmission in young children in settings other than the home is uncommon. A higher acquisition in other places, such as schools or kindergartens, should alert health authorities.

As in our dataset for Spain, there was one paediatric patient in the Netherlands for whom the transmission route of monkeypox was not identified.<sup>4</sup> This reinforces the idea that unknown community transmission might be happening (eg, through undiagnosed patients or asymptomatic carriers), and the magnitude of this outbreak



Published Online  
September 1, 2022  
[https://doi.org/10.1016/S2352-4642\(22\)00250-4](https://doi.org/10.1016/S2352-4642(22)00250-4)

See Online for appendix

	All paediatric patients (n=16)	Younger than 4 years (n=4)	Aged 13–17 years (n=12)
Median age, years	15 (8–16)	1 (0–2)	16 (14–16)
Sex			
Male	10 (63%)	2 (50%)	8 (67%)
Female	6 (38%)	2 (50%)	4 (33%)
Country of birth			
Spain	16 (100%)	4 (100%)	12 (100%)
Transmission route			
Contact with contaminated material	9 (56%)	0	9 (75%)
Household contact	3 (19%)	3 (75%)	0 (0%)
Sexual close contact	3 (19%)	0	3 (25%)
Unknown	1 (6%)	1 (25%)	0
Specimen of detection			
Skin lesion	16 (100%)	4 (100%)	12 (100%)
Symptoms			
Rash	16 (100%)	4 (100%)	12 (100%)
Lymphadenopathy	5 (31%)	0 (0%)	5 (42%)
Fever	4 (25%)	2 (50%)	2 (17%)
Asthenia	2 (13%)	0	2 (17%)
Sore throat	2 (13%)	0	2 (17%)
Myalgia	1 (6%)	0	1 (8%)
Vomiting	1 (6%)	1 (25%)	0
Diarrhoea	1 (6%)	1 (25%)	0
Antiviral treatment	0	0	0
Hospitalisation	0	0	0
Complications	1 (6%)	1 (25%)	0
Survived	16 (100%)	4 (100%)	12 (100%)

Data are median (IQR) or n (%).

**Table:** Characteristics of patients younger than 18 years with laboratory-confirmed monkeypox virus infection in Spain from April 26 to Aug 3, 2022

For RENAVE see <https://eng.isciii.es/eng.isciii.es/QueHacemos/Servicios/VigilanciaSaludPublicaRENAVE/Paginas/default.html>

could be even greater than currently estimated. Thus, physicians attending children should be trained in identifying the manifestations of monkeypox and not focus only on epidemiological risk factors or exposure to patients with confirmed infection.

Although the severity in non-endemic countries seems lower than that reported in endemic countries, during the 2003 outbreak in the USA, the two patients with severe monkeypox were children (one complicated with encephalitis and one with retropharyngeal abscess).<sup>5</sup> Until there is more evidence, children, neonates, and pregnant women should be considered a risk group for complications and mortality,<sup>6</sup> and it is necessary to maintain a high level of alertness.

We declare no competing interests.

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