



# An outbreak of monkeypox in the Congo Basin

In February 2020, the medical staff of the Congolaise Industrielle des Bois (CIB) hospital in Pokola, a small town in the department Sangha of the Republic of the Congo (Congo-Brazzaville), faced a small outbreak of monkeypox. All cases occurred in the same family of Mbendjele BaYaka, hunter-gatherers living in a small village in the rainforest of the Central Congo Basin, in the neighbouring department of Likouala (Figure 1).



Figure 1. Map of Republic of the Congo and location of the outbreak.

## CASE DESCRIPTION

In early February, the mother presented two children to the outpatient department of the hospital in Pokola. Patient A, a previously healthy seven-years-old boy, had a one-week history of fever, dry cough and a sore throat. He developed a rash two days after the start of the fever. Upon examination, a generalised vesicular rash all over the body was seen, including palms of the hands and soles of the feet. Further of note was a generalised lymphadenopathy (Figure 2A, B).

His twenty-year-old sister, patient B, presented with a similar clinical picture that had started a few days later. However, pustules and crusts accompanied the vesicular rash, and the oral mucous membranes and the conjunctivae were affected (Figure 2C). On the sole of the right foot a deeper

lesion was noted. Both patients did not appear ill and the fever on presentation had subsided. The mother had no symptoms at all. Thorough history taking did not reveal a bite or scratch of animals, bush meat preparation, or other direct contact with dead animals. However, the mother mentioned that her son (patient A) might have eaten bush meat at another family house.

The third patient, patient C, the five-year-old sister of patient A and B, was admitted one week later with a history of fever for four days, a generalised vesicular rash for one day, loss of appetite and fatigue. On examination, she appeared ill with a temperature of 38°C and was dehydrated. The fourth and fifth case from the family, patients D and E, a sixteen-year-old girl and four-year-old boy respectively, turned up a few days later with the same clinical picture as the first two patients. They did not appear to be ill.

In view of the clinical picture and local epidemiology, the working diagnosis was monkeypox. Other diagnoses considered were chickenpox, scabies and pian (an endemic non-venereal treponematoses). All of these were less likely, supported by the experience of an earlier smaller outbreak in 2019 with an identical clinical picture that had occurred in the Likouala Department. The outbreak was confirmed as monkeypox virus infection by PCR techniques at the Laboratoire Nationale de Santé Public

(LNSP) in Brazzaville with the help of the United States of America's (USA) National Institutes of Health (NIH).

## CASE MANAGEMENT IN THE HOSPITAL

After admission, all five patients were managed in a separate isolation ward following the *Interim national guidelines for monkeypox outbreak response* of the Nigerian Centre for Disease Control (NCDC) and the Nigerian Federal Ministry of Health.<sup>[1]</sup> After a refresher training on hygienic protocols and use of personal protective equipment (PPE), a team of nurses previously vaccinated against smallpox was designated to care for the patients. The patients were visited regularly for culturally appropriate psychosocial support by a Mbendjele BaYaka hospital guide. Strengthening nutrition was provided. Clinical management consisted of daily assessment of the patients as well as providing supportive treatment in case of fever, aches and care of the skin lesions. All patients but one had an uncomplicated self-limiting course of the disease, and were discharged when the majority of the skin lesions had crusted (Figure 3). The remaining five-year-old girl, patient C, with dehydration and fever on admission, went through an eventful course with vomiting, bloody diarrhoea, bouts of hypoglycaemia, pneumonia and respiratory distress. Despite intensive medical treatment and nursing care, she died on the tenth day of admission. A safe and dignified burial was carried out.



Figure 2A, B. Clinical picture with vesicular rash in patient A at presentation; C. Rash of patient B at presentation.



Figure 3. Crusted and healed lesions of patient A upon discharge.

#### PUBLIC HEALTH INTERVENTION IN THE DISTRICT

The hospital staff organised an outreach to the villages in the area where the disease originated. With the help of facilitators from an NGO experienced in health communication with Mbendjele BaYaka, actions were explained to reduce animal-to-human and human-to-human transmission. With emphasis on the low fatality rate and self-limiting aspect of the disease, the aim was to reduce panic and stigmatisation. Previously trained and well installed Mbendjele BaYaka healers were instructed and provided with pictogrammed education material to ensure continued public health messaging.

#### BACKGROUND ON MONKEYPOX

Monkeypox is a rare viral zoonotic disease, endemic to West and Central Africa. The causing virus belongs to the Orthopoxvirus genus that includes variola virus (the cause of smallpox), vaccinia virus (used in the smallpox vaccine), and cowpox virus. It was first discovered in 1958 when two outbreaks of a pox-like disease occurred in colonies of monkeys kept for research, hence the name 'monkeypox'. Human cases were first reported in 1970 in the Democratic Republic of the Congo.<sup>[2]</sup> An outbreak in Nigeria, ongoing since 2017, is the largest documented.<sup>[3]</sup> Outside of Africa, from 2003 to date, cases of human monkeypox infections have been documented in four countries: United

Kingdom, Israel, Singapore and the USA.<sup>[4]</sup> These imported cases have all been associated with travel from Nigeria.

The animal reservoir of monkeypox remains unknown. Evidence suggests that it may be rodents and squirrels. Transmission through direct or indirect contact with animals – live or dead animals – including through bush meat consumption, hunting, or trade, is presumed to be the main factor for human monkeypox infections. Human-to-human transmission is less common but possible through close contact with an infected person's skin lesions and large respiratory droplets exhaled during extended face-to-face contact. The incubation period averages between seven to fourteen days. The symptoms, which are usually self-limiting, begin with fever, lymphadenopathy, and myalgia, within a few days followed by skin eruptions, all over the body, with mucous membranes also affected. The rash develops sequentially from macules to papules to vesicles and finally to pustules which crust, dry and fall off. Lymphadenopathy is a key feature that can help to differentiate monkeypox from diseases with similar initial presentation (e.g. chickenpox, measles, smallpox). Case fatality rates range from 1% to 11%, highest with the Central African viral clade and younger children. No specific treatments are available. No vaccine is currently licensed. Observational trials have shown that smallpox vaccines provide up to 85% protection against monkeypox. PCR testing of skin lesion swab or urine sample, and sequencing confirm the diagnosis of monkeypox infection.

Sudden outbreaks with a potentially high transmission risk, such as the one described here, need to be counteracted by public health measures such as case detection, case isolation, appropriate community health messaging and protective measures for health care workers.

#### CONCLUSION

Monkeypox is a rare viral disease with a low case fatality rate. Increased human-animal interactions are likely to cause (larger) outbreaks in the future. With knowledge of local epidemiology and good clinical reasoning, it can be

diagnosed, even if sophisticated laboratory support is not at hand. Protocols from national disease control centres such as the NCDC as well as online local and international consultation are recommended for proper management and public health interventions.



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