

## FATAL MONKEYPOX IN A CHILD IN KIKWIT, ZAIRE

by

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*Summary* — A 2.5 yr old boy was hospitalised in May 1982 at Kikwit, Zaire, with a smallpox-like eruptive disease. He died after 10 days. Monkeypox was suspected from start, and it was diagnosed virologically. There was no suspected source of the virus, and there were no secondary cases in his relatives and village, where 82 percent of children under 4 had not received smallpox vaccination.

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### Introduction

Intensive surveillance after presumed smallpox eradication has led to the first definite diagnosis of monkeypox in man. It occurred in Zaire in 1970 (Ladnyj, Ziegler & Kima, 1972), two years after the last case of smallpox was noticed in that country (Lekie, 1971). The aspect and distribution of the skin lesions in smallpox and monkeypox are identical, and this explains why monkeypox had never been recognized in humans before eradication of smallpox was achieved in endemic areas.

Cases of human monkeypox seem to cluster in some areas, especially in the Equateur, Kasai Oriental and Bandundu regions of Zaire. We describe here the clinical features and outcome of human monkeypox case 68.

### Case description

On May 10, 1982, a 2.5 years old boy who had never been vaccinated against smallpox, was admitted to Kikwit General Hospital. He was severely ill with a generalised vesiculo-pustular eruption. The child was from a community of 261 inhabitants (Camp Bulumbu III) at Kikongo, near the Kwilu river in the region of Bandundu.

The illness started on May 3 with high fever and malaise. A papular eruption appeared on May 7 on the forehead and then spread rapidly over the whole body. As the boy's condition worsened progressively, the parents decided to bring him to the hospital.

On admission the child had a temperature of 37.5 °C. He had no signs of dehydration and the nutritional status was apparently good (body

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weight : 10 kgs). The most striking features were vesicles and pustules spread over the entire body including arms, legs, palms, soles, genitals and, most prominently, the face (fig. 1). Young vesicles and older ulcers were present simultaneously on all parts of the body. Only few lesions were present on the mouth mucosa and the tongue. There was bilateral conjunctivitis and palpebral lesions. The child was somnolent, but his consciousness was normal. He had a non-productive cough and prolonged expiration, but no rales were heard on auscultation. Lymphadenopathy was absent. Abdominal palpation revealed a slightly enlarged spleen, which is not an unusual finding in this hyper-endemic malaria region.

Supportive treatment with penicillin, and bronchial dilatation, was immediately started. The skin lesions were disinfected and the conjunctivitis was treated with a chloramphenicol ointment. Despite penicillin therapy, the child developed a pneumonia with scattered coarse rales and persisting high fever. Umbilicating skin pustules and desquamation of crusts left more or less pronounced skin ulcers (fig. 2).

Penicillin was withdrawn, chloramphenicol and corticosteroids were given. On May 22, the child developed very high fever and seizures, and died.

Diagnosis of monkeypox was suspected on admission by the paediatric chief nurse, who had seen three suspected cases a few months earlier; those cases had been milder, and were not confirmed on virological examination. Vesicle fluid and crusts of the present patient were sent to WHO headquarters in Geneva (Dr. Arita) on May 11. The diagnosis of monkeypox infection was confirmed by electron microscopic findings and subsequent cultivation of the virus.

Immediately after WHO had confirmed the diagnosis of monkeypox, a team of the Expanded Programme on Immunisation was sent to Kikongo village to investigate the circumstances of this infection. They revealed that 19 per cent of children below the age of 4 years had a vaccination scar; this figure was 66 per cent in children between 4 and 15 years and 91 per cent in adults. In the patient's family, only the parents had a vaccination scar and none of his 3 older brothers were vaccinated. No secondary cases occurred among family members or among the neighbour families. None of the household members had had contact with wild animals, and the child had not travelled in the period preceding the illness.

One month before his fatal monkeypox, the child had suffered from measles. There had been 38 cases of measles, 10 of them fatal, in this outbreak at Camp Bulumbu III.

## Discussion

Human cases of monkeypox have been reported only from the tropical rain forest and its borders in Central and West African countries, and they mainly occur in the dry season. Evidence of close contact with wild animals is rare and secondary human cases are exceptional. Cases occur more frequently in young children (Breman *et al.*, 1980). As the majority of adults have been vaccinated with vaccinia virus which protects against smallpox virus infection and probably against monkeypox infection (Breman & Arita, 1980), it seems normal that unvaccinated young children are more at risk of monkeypox infection than adults.



Figure 1.  
Early vesicular, some pustular, and some ulcerating lesions  
of monkeypox, 5 days after onset of eruption.



Figure 2.  
Mainly ulcerating lesions of monkeypox,  
10 days after onset of eruption, 5 days before fatal outcome.

The reservoir of monkeypox virus is unknown. Monkeypox in animals has been recorded only in monkeys in captivity; the mortality of infected animals was always high and transmission to humans never occurred. Monkeypox infection in monkeys seems to be very incidental as it is in humans, and this makes the hypothesis that monkeys could be natural hosts of monkeypox unlikely.

The majority of human monkeypox cases are reported from Zaire. Although Zaire is covered by 40 per cent of the African tropical rain forest, this geographical feature alone does not explain the clustering of recognised cases in Zaire. Surveillance following smallpox eradication has been exceptionally well organised in Zaire, and has certainly contributed to efficient recognition of cases of monkeypox.

Exposure of humans to monkeypox infection might still be considerably higher than what is revealed by laboratory-confirmed clinical cases. A recently developed radioimmunoassay based on specific absorption of sera with heterologous antigens is now able to distinguish in human sera antibodies against monkeypox, smallpox, and vaccinia, respectively (Walls, Ziegler & Nakano, 1981).

The patient we described here is the sixty-eighth verified and registered case of human monkeypox (Dr. Arita, personal communication). It is quite a typical case. It occurred in a young child in the dry season in the Bandundu area from where several cases were reported. The child was not vaccinated and although most of the children of his village were not, no secondary cases occurred. The only uncommon features were the absence of lymphadenopathy and the fatal outcome of the disease.

#### **Un cas mortel de monkeypox chez un enfant à Kikwit, Zaire.**

*Résumé* — En mai 1982, un garçon de deux ans et demi, présentant une éruption varioliforme, fut hospitalisé à Kikwit (Zaire). Il décéda après dix jours. Le diagnostic de monkeypox fut soupçonné dès l'admission et confirmé ensuite par des examens virologiques. L'origine de l'infection ne fut pas trouvée et aucun cas secondaire ne s'est produit dans sa famille ni dans son village où 82 p. cent des enfants en dessous de quatre ans n'avaient jamais reçu le vaccin antivariolique.

#### **Een dodelijk geval van monkeypox bij een kind in Kikwit, Zaire.**

*Samenvatting* — In mei 1982 werd een twee en een half jaar oud jongentje met een varioliforme huidruptie gehospitaliseerd te Kikwit, Zaire. Hij overleed na tien dagen. Bij opname werd de diagnose van monkeypox onmiddellijk vermoed en naderhand door virologisch onderzoek bevestigd. De infectiebron werd niet gevonden en er deden zich geen secundaire gevallen voor in zijn familie noch in zijn dorp hoewel er 82 ten honderd van de kinderen jonger dan vier jaar nooit pokkenvaccinatie ontvangen had.

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