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Monkeypox in an Immunocompetent Vaccined Adult: A Case Report at the University Teaching Hospital of Bouake

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Abstract

Introduction: With the eradication of smallpox in 1980, vaccination against smallpox ceased and there was an upsurge in cases of monkeypox. The objective of this observation is to describe the characteristics of monkeypox in the vaccinated subject. **Case Report**: A 45-year-old, heterosexual, rural resident was referred for a rash. The history of the disease revealed signs of acute course marked by headache, asthenia, diffuse myalgia, chest pain, fever and pruritic rash. His background is marked by vaccination against smallpox in 1977, cohabitation with game hunters and domestic animals as well as a notion of contact with a person who presented similar but more generalized signs. The physical examination revealed a conscious patient with good general state, feverish, tachycardic, eupneic presenting skin lesions in the type of striated vesicles more or less umbilical, on the scalp, face, neck, trunk and the upper limbs associated with cervical lymphadenopathy. RT-PCR was performed on a dry swab by rubbing several vesicles and a throat swab proved positive for Monkeypox Virus (MPXV). Management consisted of isolation and symptomatic treatment. The evolution has been favorable. **Conclusion**: The symptomatology of monkeypox is similar to that of smallpox. Without widely available treatment or prophylaxis, rapid identification of cases is essential. Vaccination of people at risk is an alternative to curb the epidemic. However, the main prevention strategy is to raise awareness of the risk factors.

Keywords

Monkeypox, Rash, Immunocompetent, Bouaké

1. Introduction

Monkeypox (MPX) is an emerging zoonosis caused by monkeypox virus (MPXV), a member of the genus Orthopoxvirus in the family Poxviridae. It is one of four species of orthopoxviruses pathogenic for humans, together with variola virus, the causative agent of smallpox, now eradicated [1]. The Monkeypox virus was first isolated and identified in 1958 when monkeys shipped (hence the name) from Singapore to a research center in Denmark fell ill [2]. However, the first confirmed human case was in 1970 when the virus was isolated from a child in the Democratic Republic of Congo suspected of having smallpox [3]. Transmission can occur through contact with bodily fluids, skin lesions, or respiratory droplets of infected animals directly or indirectly via contaminated fomites. Although human-to-human transmission has previously been limited, mathematical modeling in the context of declining herd immunity to orthopoxviruses reflects a growing threat of disease spread between humans [4]. The disease usually begins with fever, followed by the development of multiple papular, vesiculopustular, and ulcerative lesions on the face and body and prominent lymphadenopathy [5]. Complications include pneumonitis, encephalitis, keratitis, and secondary bacterial infections [5]. The precise prevalence and incidence of Monkeypox are difficult to establish given the alleged gaps in disease reporting and confirmation. However, both parameters have increased since discontinuation of routine smallpox vaccination [6] [7]. In September 2017, monkeypox reappeared after a 39-year hiatus [8]. Monkeypox outbreaks are rarely reported, poorly managed and poorly described, giving an incomplete picture of the importance of the disease [6]. Also, since most cases of monkeypox are localized to Africa and rural areas, assumed underreporting may result in underestimating the potential threat of this pathogen [6]. Since early May 2022, there has been an emergence of monkeypox cases in more than 50 countries across five regions, prompting the World Health Organization on June 23, 2022, to declare monkeypox a public health emergency of international scope [9]. As of August 12, 2022, 31,799 cases have been reported worldwide, including 12 deaths [10]. In the same period, 383 cases were reported in Africa, including 7 deaths. This outbreak marks the first time monkeypox has spread widely outside of West and Central Africa. To date, no cases have been reported in Côte d'Ivoire [10]. Coincident immunity to monkeypox virus was previously achieved with vaccinia vaccination. However, the eradication of smallpox and the resulting lack of vaccination efforts paved the way for monkeypox [11]. We present a case of a non-severe form of monkeypox, in a contact person, immunocompetent and vaccinated against smallpox. The objective is to describe the characteristics of the disease in the vacci-

nated subject.

2. Case Report

He is a 45-year-old, heterosexual, rural resident, referred for a rash. The history of the disease revealed signs evolving 3 days before his admission marked by headaches, asthenia, diffuse myalgia, chest pain evolving in a context of unquantified fever. These signs led him to consult a primary health center where he was treated for simple malaria in the face of a positive rapid diagnostic test for falciparum. The evolution was marked 2 days later by the persistence of the signs and the appearance of pruritic vesicles sitting on the head, neck, trunk and upper limbs, which motivated the referral to the infectious diseases department. His background is marked by vaccination against smallpox, cohabitation with game hunters and domestic animals. There was no recent consumption of bushmeat or taking medication. In addition, we note 15 days before the onset of the signs, a notion of contact with a person who presented similar but more generalized signs, in whom the monkeypox virus was found on RT-PCR on a dry swab of the cutaneous vesicular fluid. Physical examination revealed a conscious patient in good general condition, feverish (39˚C), tachycardic (108 bpm), eupneic (17 cpm). The mucocutaneous examination revealed more or less umbilical striated vesicular lesions on the scalp, face, neck, trunk and upper limbs (**Figure 1**). There were no lesions in the conjunctival, oral, genital and anal mucosa. Hair and fingernails were normal. The spleno-nodal examination revealed polyadenopathies under the chin, bilateral laterocervical, occipital (**Figure 2**), which were painless, firm mobile with respect to the deep and superficial plane. No splenomegaly was noted. Faced with this clinical picture, the hypotheses of eruptive fever, namely, chicken pox, monkey pox or an insect bite were issued. Complete blood count and C-reactive protein assay were normal. The RT-PCR performed on a dry swab by rubbing several vesicles and the throat swab proved positive for Monkeypox Virus (MPXV) (**Figure 3**), confirming the diagnosis of

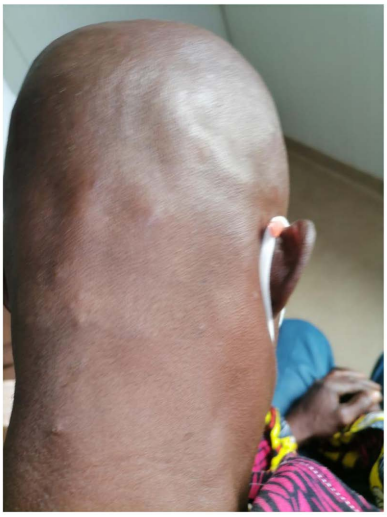


Figure 1. Umbilical blister lesions in a 45-year-old subject vaccinated against smallpox.

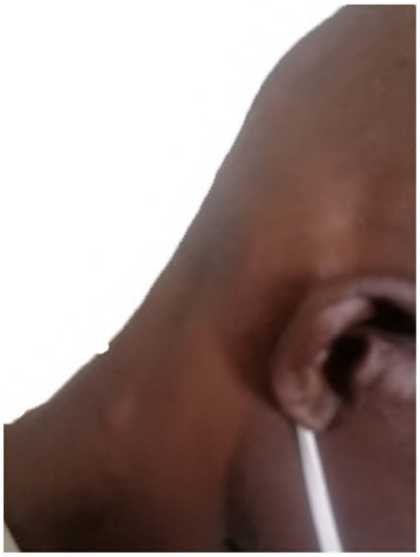
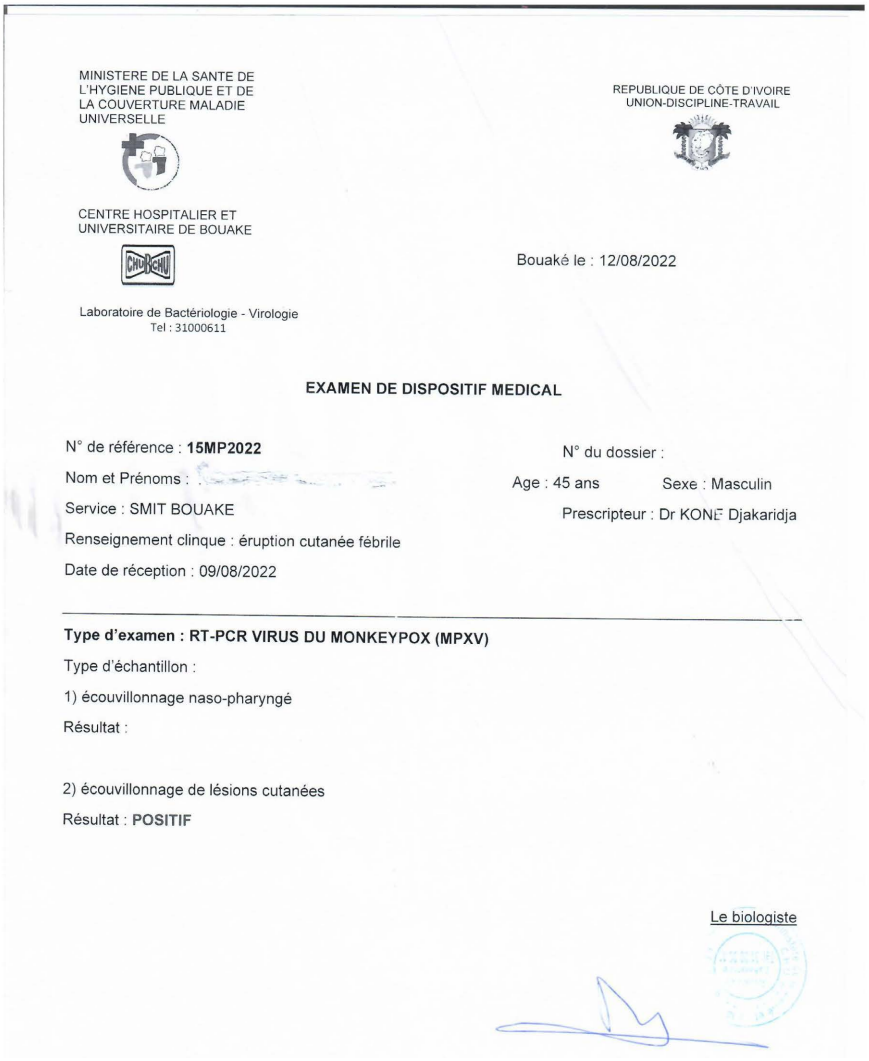


Figure 2. Cervical lymph nodes in a 45-year-old subject.



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CENTRE HOSPITALIER ET UNIVERSITAIRE DE BOUAKE

Bouaké le : 12/08/2022

Laboratoire de Bactériologie - Virologie
Tel : 31000611

EXAMEN DE DISPOSITIF MEDICAL

N° de référence : **15MP2022**
N° du dossier :
Nom et Prénoms :
Age : 45 ans Sexe : Masculin
Service : SMIT BOUAKE
Prescripteur : Dr KONE Djakaridja
Renseignement clinque : éruption cutanée fébrile
Date de réception : 09/08/2022

Type d'examen : RT-PCR VIRUS DU MONKEYPOX (MPXV)
Type d'échantillon :
1) écouvillonnage naso-pharyngé
Résultat :

2) écouvillonnage de lésions cutanées
Résultat : **POSITIF**

Le biologiste

Figure 3. Monkeypox RT-PCR results.

monkeypox. Management consisted of isolation of the patient with oral feeding, administration of analgesic, antipyretic (paracetamol), antiasthenic (calcium ascorbate) and twice daily monitoring of haemodynamic constants (state of consciousness, temperature, blood pressure), and treatment of skin lesions with antiseptics and aqueous eosin. The evolution was favourable marked by the healing of the lesions and the formation of crusts (**Figure 4**).

3. Discussion

MPX has always been considered a rare sporadic disease with limited ability to spread between humans [12]. The clinical picture closely resembles that of smallpox, but the main difference that distinguishes MPX from smallpox is the enlarged lymph nodes that occur early, often at the onset of fever. A rash usually appears 1 to 3 days after the onset of fever and lymphadenopathy, with the lesions appearing simultaneously and progressing at a similar rate. Their distribution is mainly peripheral but can cover the whole body in severe disease [8] [13]. Internationally accepted case definitions recently expanded to include gay or bisexual men and other men who have sex with men as a risk group [14]. However in this reported case the patient was heterosexual. Other people most at risk are those who live or have close contact with someone who has monkeypox, or who have regular contact with animals that might be infected. The risk factors identified in this reported case were cohabitation with hunters and domestic animals that are susceptible to infection. Also, contact with someone with similar severe signs. Previous data noted that the rate of people living with an infected person and developing symptoms of MPXV infection ranged from 3% to 11% [15]. Previous reports have shown up to 6 events of intrafamilial transmission [16]. Transmission is thought to occur by means of salivary or respiratory droplets or

Figure 4. Disseminated hypochromic macules in a 45-year-old subject vaccinated against smallpox.

by contact with exudate from the lesion [17]. However, evidence suggests that infection can occur by direct inoculation [18]. Patient care consisted of isolation and symptomatic treatment. There is currently no specific treatment for monkeypox virus infection. As with most viral illnesses, patients are managed symptomatically [19]. For severe monkeypox virus infections, investigational antiviral therapies, such as tecovimat, cidofovir, or brincidofovir may be considered [20]. No complication was noted in this observation and the evolution was favorable. In the literature, few patients with Monkeypox have a serious illness requiring hospitalization. However, some patients may suffer from a variety of complications, including secondary bacterial infections, respiratory distress, bronchopneumonia, gastrointestinal involvement, dehydration, sepsis, encephalitis, and corneal infection with subsequent loss of vision [19]. The absence of complications could be explained by the fact that the patient was vaccinated against smallpox, which protected him against a severe form of the disease. Indeed, the existing vaccination against smallpox is 85% cross-effective against Monkeypox. 40 years ago it was estimated that 80% of the population was immune to smallpox, currently it is considered that this protection is around 30% [21]. This vaccination provides cross-protection against monkeypox or a very mild form of the disease [Harris E 2022]. There is currently a 3rd generation smallpox vaccine MVA-BN (Modified Vaccinia Ankara from Bavarian Nordic (en) (IMVANEX in Europe, JYNNEOS in the United States or IMVAMUNE in Canada), effective against monkeypox [22]. Identifying the potential benefits and harms of preventive vaccination against monkeypox in endemic communities requires further data collection and feasibility analysis [23]. Access to medical care, testing capacity and infrastructure limits the ability to make informed decisions about how best to treat this neglected tropical disease [19]. The main prevention strategy for monkeypox is to raise awareness of the risk factors and educate people about steps to take to reduce exposure to the virus. Also surveillance and rapid identification of new cases are crucial to containing outbreaks.

4. Conclusion

Monkeypox occurs mainly in the jungles of central and western Africa. The disease, unlike smallpox, is a typical zoonosis in that most cases occur following direct contact with an infected animal. However, human-to-human transmission is possible. Symptoms of the disease in humans can be very similar to those of smallpox, chickenpox, or other causes of vesiculopustular rash. Clinicians should be alert to unusual rashes. Without widely available treatment or prophylaxis, rapid identification of cases is essential. Vaccination of people at risk is an alternative to curb the epidemic. However, the main prevention strategy is to raise awareness of the risk factors.

Ethical Consideration

Patient gave his consent for the writing and publication of the study.

Contribution of the Authors

All the authors participated intellectually in the preparation and revision of the manuscript before its submission.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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