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Papulo-Vesicular Rash Revealing Monkeypox in Immunocompetant Children : About Two Cases at University Teaching Hospital of Bouake

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Abstract

Introduction : *Due to the similarity of clinical manifestations with tropical diseases, data onpediatric monkeypox are limited. Based on two clinical cases, we illustrate the diagnostic difficulties of the disease in our context of a country with a high endemicity of febrileillnesses. The objective of these observations is to contribute to the improvement of clinical practice.*

Cases report: *These are two children who presented with a rash after an influenza-like illness requiring treatment for malaria. This eruption was assimilated to chickenpox, but epidemiological doubts led to the performance of additional examinations. The RT-PCR performed on a dry swab by rubbing several vesicles and the throats wabproved positive for Monkeypox Virus (MPXV). Management consisted of isolation and symptomatic treatment. The evolution was favorable.*

Conclusion : *despite the epidemiological change in Monkeypox cases, these observations show that the disease can develop in children. Clinicians should be alert for an unusual rash associated withflu-like illness.*

Mots-clés : *Monkeypox, Children, papulo-vesicular rash, Bouaké*

Introduction

Monkeypox is a zoonos is closely related to smallpox, caused by the monkeypox virus (MPXV). It presents as a pustular rash similar to but much lesss everethans mall pox[1]. The disease usually begins with fever, followed by the development of multiple papular, vesiculopustular, and ulcerative lesions on the face and body and prominently mphadenopathy[2]. Transmission can occurthrough contact with bodily fluids, skin lesions, or respiratory droplets of infected animals directly or indirectly via contaminated fomites. Human-to-human transmission, previously thought to beless important, maybe on the rise[3]. Monkeypoxout breaks are rarelyreported, poorly managed and poorly described, giving an incomplete picture of the importance of the disease [3]. Further more, since most Monkeypox cases occur in rural Africa, under-reporting of cases mayresult in under estimating the potential threat of this disease[3] Age-specific incidences occur in people under 15 years of age. Outside the African continent, the risk of children being infected with the Monkeypox virus is low. During the outbreak in the United States, of

the confirmed cases in 2003 (n=35), 11 patients were under 18 years of age[4]. On the other hand, in African epidemics, 90% of patients were children under 15 year sold[5]. However, in recent years, there has been an epidemiological change in the current Monkeypox epidemic. In the early years (1970-1989), Monkeypox was primarily a disease of young children, with a medianage at presentation of 4-5 years; this age increased to 10 years in 2000-2009 and to 21 yearsin 2010-2019. Regarding the age at death of Monke ypox cases, 100% of deaths were in children under 10 years of age in the early years, while for the years 2000 to 2019, subjects under 10 years of age did not represent than 37.5% of deaths[6]. During this new epidemicin 2022, as of August 3, out of 26,583 cases recorded world wide, there were 2 pediatric cases, i.e. 7.5 per 100,000 cases[7 ; 8]. We present two pediatric cases of Monkeypox. These cases illustrate the diagnostic difficulties of the disease in ourcontext of a country with a high endemicity of febrile illnesses. The objective of these observations is to contribute to the improvement of clinical practice.

Observation 1

This is a 10-year-old girl, living in a rural area withher parents, referred by the nurse at the primary health center in her village on August 10, 2022 for an itchy rash. The history of the disease revealed sign sevolving 15 days before his admission marked by headaches, asthenia, diffuse myalgia, odynophagia, all evolving in a context of unquantified fever. These sign sled him to consult a primary health center where a falciparum rapid diagnostic test (RDT) was performed. In view of the positivity of the test, an anti malarial treatmen twas administered to him. The evolution was marked 72 hours later by the persistence of the signs and the appearance of itchy blisters on the head, before generalizing to the whole body. This new symptom atology made it possible to evoke the diagnoses of primary varicella infection or poxvirus infection. The blood count, the C-reactive protein assay did not show any abnormalities and the retroviral serology was negative. A dry swab of the vesicles and a throats wab were taken for RT-PCR to search for Varicella Zoster Virus (VZV) or Poxvirus (PXV). Pending the results, she was referred to the Infectious Diseases Department. Hishistory ismarked by good socialization, non-updated EPI and non-EPI vaccination, with no history of varicella disease. In addition, we note a cohabitation with domestic animals and game hunters also several people in the village had similar symptoms including the father. There was no recent consumption of bush meat, norany notion of sexual abuse. The physical examination revealed a conscious child in good general condition, feverish (38.9°C), tachycardic (116 bpm), eupneic (19 cpm). The mucocutaneous examination revealed scarring lesions associated with striated crusts on the face, neck and trunk. Striated vesicular lesions with an umbilical center were also noted on the upper and lowerlimbs, including the palmoplantar level. Append ages (nails, hair) and vulvar and anal mucous membranes were normal. The ophthalmological examination revealed a lesion amputating the free edge of the lower right eyelid. Contralateral eyee xamination was normal. Visual acuity was preserved in both eyes and fundus examination was normal. The spleno-nodal examination revealed polyadenopathy under the chin, painless, firm mobile in relation to the deep and superficial plane. No splenomegaly was noted. The cardio-respiratory examination was normal. The RT-PCR result was positive for Monkeypox virus (MPXV) as well as that of his father. Management consisted of isolation, administration of antipyretic (paracetamol), antiasthenic (calcium ascorbate). The evolution was favorable without sequelae. An investigation is under way in the village and its surroundings for the active search for new cases.

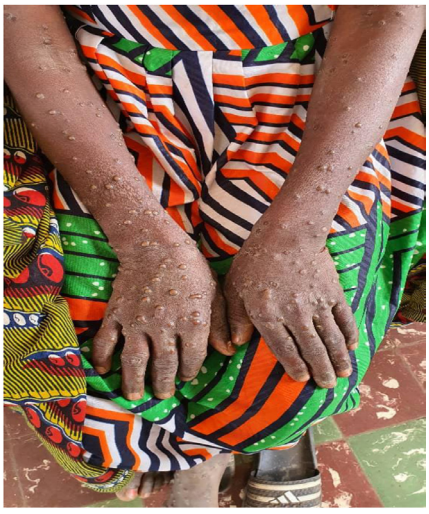

Figure 1. Disseminated vesiculobullous skin lesions in a 10-year-old child

Figure 2. Disseminated hypo chromic macules in a 10-year-old child

Observation 2

A 7-year-old boy, residing with his parents in the same rural area, who presented with an eruptive fever, was referred for management of Monkeypox, after an RT-PCR swab of the lesions and a nasopharyngeals wab, positive for Monke ypox Virus (MPXV). The history of the disease revealed signs evolving 10 days before his admission marked by fever, asthenia, headaches and muscle pain. Faced with this symptomatology, the child was treated as simple malaria after a thick drop which was positive. The evolution was marked 5 dayslater by a vesicular, non-pruritic rash, descending from the head to the lowerlimbs. The hypothesis of Monkeypox was put forward in the face of this unusual symptomatology in an epidemic context and was confirmed by RT-PCR. This prompted the referral to the infectious diseases department. His antecedents are marked by good socialization, up-to-date EPI and non-EPI vaccination. There was no contact during the two weeks preceding the signs either with a rodent or with a monkey. The physical examination revealed a stable child on the neuro-cardio-respiratorylevel and afebrile. There were generalized skin lesions of differentages in the form of scabs or vesicles with an umbilical centre, associated with non-inflammatory cervical and inguinal polyadenopathy. Laboratory analys is showed a normal erythrocytese dimentation rate. Hemoglobin, thrombocytes and leukocyte count were normal. Management consisted of isolation and administration of antiasthenic (calcium ascorbate). The child was discharged from the hospital 5 days later after a favorable evolution.

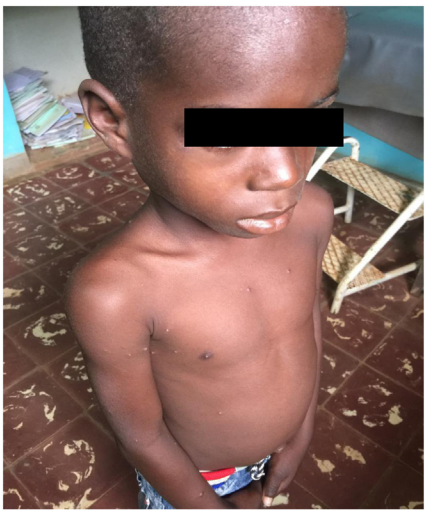

Figure 3. pustular lesions in a 6-year-old child

Figure 4. cervical lymphadenopathy in a 6-year-old child

Discussion

The reported cases illustrate the obstacles related to the diagnosis of Monkeypox. This ignorance of the disease raises several problems. Cases may remainun diagnosed and international surveillance data may belimited. Also, it can promote contact between infected and uninfected people, and thus contribute to the spread of the disease[9 ;10].In the current epidemic, the predominant route of transmission is related to sexual activity in the community of men who have sexwith men. However, other indirect routes of transmission have been described, such as

respiratory transmission through pflugg droplets and close contact with infected people or animals[6 ; 11]. In the first case presented, cohabitation with domestic animals and game hunters couldbe the source of contamination. However, wecould not identify any possible source of infection for the 2nd case. It wouldbe possible that the child was in close contact with an infectious person or a contaminated object not recognized as such. In the two cases presented, there is diagnostic error. This diagnostic wandering is nothing new in Africa, especially since the first confirmed human case in a childfrom the Democratic Republic of Congo suspected of having small pox[12]. This couldbe explained by the factthat Monkeypox begins with an influenza-like syndrome found in several tropical pathologies. In the eruptive phase, the differential diagnosis of Monkeypox includes other pox viruses and herpes viruses, includin gvaricella[13]. Nearly 90% of patients infected with Monkeypox developly mphadenopathy, whichis the main feature distinguishing Monkeypox from small pox[14 ; 15]. Also, the skin lesions progress down ward reaching the scalp, face, trunk and extremities including the palms and soles of the feet as in the cases we have presented. Monkeypox cases are confirmed based on virus isolation or virus detection by polymerasev chain reaction (PCR) from a clinical specimen (skin biopsy or throats wab culture) [16].The treatment of Monkeypox is mainly symptomatic, as in these two observations. There is currently no specific antiviral treatment. Individuals with severe disease, immunocom promised patients, children under 8 years of age, and pregnant women should be considered for antiviral therapy[17]. There are currently 2 antiviral drugs that can beused for Monkeypox infections: tecovirimat and brincidofovir. Tecovirimat prevents viral envelope formation by inhibiting p37, a highly conserved protein in all ortho pox viruses. Tecovirimat was approved by the FDA for the treatment of small poxin 2018, and the CDC has an Expanded Access–Investigational New Drug (EA-IND) protocol that allows its use in non-variolaortho pox viruses such as variola virus monkey[13]. The evolution was favorable in the two cases that we presented. Monkeypox is primarily a self-limiting disease that lasts 2-7 weeks. Complications of monkeypox virus infection include pneumonia, encephalitis, sepsis, secondary bacterial skin infections, retropharyngealabscess, and keratitis, which can lead to loss of sight. The severity of the infection depends on the age and immune status of the patient and the strain of the infecting virus. Severe cases are more common in pediatric and immunocom promised patients. The mortality rate ishigher in children under 10 than in adolescents and adults[16 ; 18]. There is post-exposure vaccination with the Modified Ankara Vaccine (VAM). This vaccine should be considered for people more than 6 months after a high-risk exposure. For infants under 6 months, post-exposure vaccination may not be effective, and other prophylactic measures (immunoglobulin administration, antiviral therapy) may be considered on a case-by-case basis[19]. The main prevention strategy for Monkeypoxis to raise awareness of the risk factors and educate people about steps to take to reduce exposure to the virus.

Conclusion

Despite the epidemiological change in Monkeypox cases, these observations show that the disease can develop in children. Symptoms of the disease can be very similar to those of smallpox, chickenpox, or other causes of a blistering rash. Clinicians should be alert for an unusual rash associated with flu-like illness. For the improvement of professional practice, rapid diagnostic tests must be made available to clinicians in order to facilitate diagnosis and epidemiological surveillance and also to prevent possible undetected transmission in the community. Raising awareness about riskfactors and vaccinating high-risk contacts can help prevent potential disease and onward transmission.

Ethical Consideration: parents of the children gave their 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 it ssubmission.

Conflictsof interest : none

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