A case of monkeypox and cytomegalovirus coinfection manifesting with crusted lesions mimicking rupiod syphilis

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Abstract

Human monkeypox is a viral zoonosis that has recently emerged worldwide. Clinical cutaneous features include papules, vesicles, and pustules. However, atypical manifestations mimicking other infectious diseases are being reported more frequently. We present a 41-year-old man patient with untreated HIV with generalized rupioid crusted ulcerated plaques with perineal ulceration that were found to represent monkeypox and cytomegalovirus infections.

Keywords: cytomegalovirus, HIV, monkeypox

Introduction

Since 2022, many cases of monkeypox are being reported in Peru. Although it is a zoonotic disease, human-to-human transmission has been described and it is currently an emerging infection. The clinical features are monomorphic papules, often umbilicated, with a central crust and subsequent healing. We report an unusual presentation of monkeypox in an untreated HIV patient.

Case Synopsis

A 41-year-old man with untreated HIV infection presented to the emergency department with one-month history of asymptomatic cutaneous lesions. Physical examination revealed generalized crusted ulcerated plaques (**Figure 1A**), many of them presenting rupioid-like crusts (**Figure 1B**) and granulomatous ulcers of the foreskin and perianal region (**Figure 1C**). Some crusted umbilicated papules were also found. There were no lesions in the oral cavity. Palms and soles were spared. Rapid plasma regain test was nonreactive and prozone phenomenon was negative. Biopsies from a rupioid crusted lesion of the hand and the perianal ulcer were performed. Histologic study of the lesion of the hand revealed ballooning degeneration, multinucleated keratinocytes, and necrosis of epidermis (**Figure 2A**). The dermis exhibited perivascular lymphocytic inflammation with some neutrophils and nuclear dust. Inflammation of dermal vessels and eccrine units were also found (**Figure 2B**). Biopsy from the perianal ulcer showed similar findings with dense intranuclear inclusions in the endothelial cells of dermal vessels (**Figure 3A**). Immunohistochemical staining for cytomegalovirus was positive in the specimen from the perianal ulcer (**Figure 3B**). Swabs taken from crusted lesions of the hand, trunk, and the perianal ulcer at the time of admission were all positive for monkeypox. During

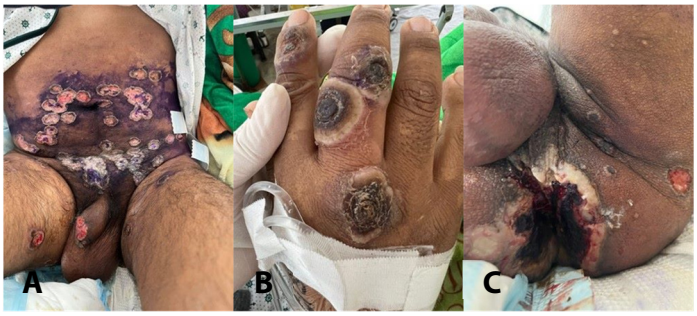

Figure 1. ***A)*** *Generalized ulcerated plaques.* ***B)*** *Rupioid crusted ulcers in the right hand.* ***C)*** *Necrotic perianal ulcer and crusted satellite papules.*

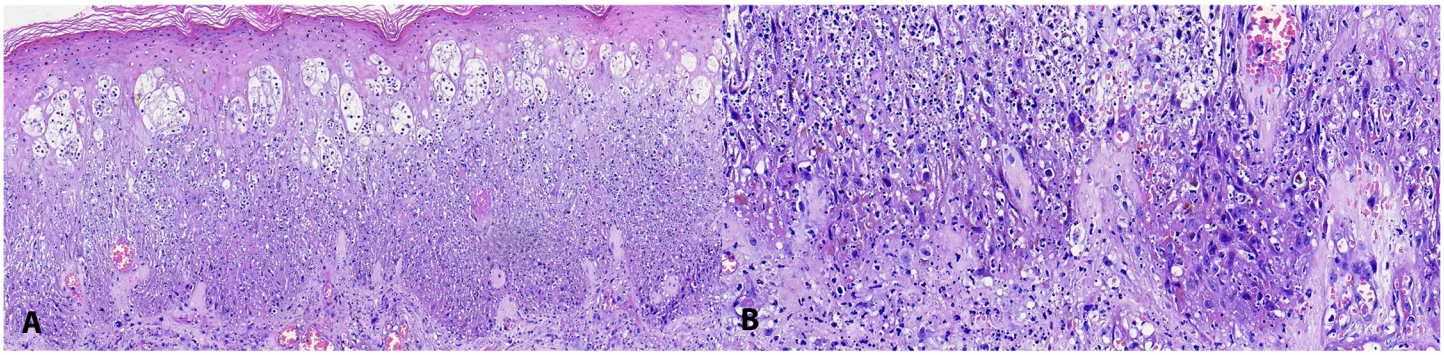

Figure 2. *H&E histopathologies.* ***A)*** *Biopsy taken from hand ulcer. Ballooning degeneration (green stars), multinucleated keratinocytes (yellow arrows), 100×.* ***B)*** *Biopsy taken from hand ulcer. Perivascular lymphocytic inflammation with some neutrophils, nuclear dust and inflammation of dermal vessels, 400×.*

hospitalization, the patient developed intestinal obstruction and died a few days later.

Case Discussion

Monkeypox is a zoonotic disease caused by a double-stranded DNA virus which belongs to the *Poxviridae* family genus *Orthopoxvirus*. Since 2022, it is considered an emerging disease outside its endemic niche in Africa affecting multiples countries. Cutaneous manifestations include macules, papules, pustules, vesicles (often umbilicated), and scabs that later heal. Skin involvement is centrifugal; the rash appears first on the face and spreads to trunk. Palms, soles, oral mucosa, and genital areas are usually affected [1,2]. A study conducted in Spain describing clinical features of cases of monkeypox reported pseudopustules as initial lesions and heterogenous lesions occurring in a generalized phase, but no relevant features of the scabs are described [3]. Escudero et al. described typical lesions of monkeypox in the perianal region as gray-to-white papulovesicles with central umbilication and yellowish white papules with a necrotic crust in the surrounding area [4]. Also described are umbilicated papules with perilesional edema coalescing into large necrotic ulcerated plaques in the scrotum and glans [5]. Variability in the clinical pattern has been reported among the African population in which cutaneous lesions appear as umbilicated white papules with a central crust, which tend to be more monomorphic and predictable. This is unlike the American population in which umbilicated papules with central hemorrhagic crust and satellite lesions are described. However, the concentric crust coats, which we describe as ostraceous-type scabs, have not been described in monkeypox infection [6].

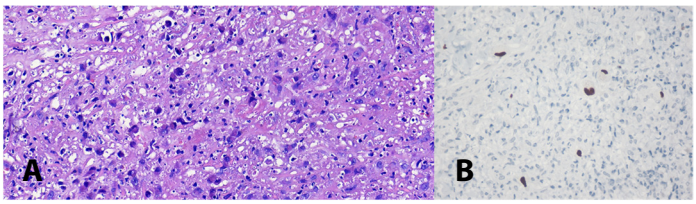

Figure 3. ***A)*** *H&E histopathologies. Biopsy taken from perianal ulcer. Multinucleated keratinocytes (red circles), intranuclear inclusions in the endothelial cells of dermal vessels (yellow circles), 400×.* ***B)*** *Biopsy taken from perianal ulcer. Endothelial cells with positive staining for cytomegalovirus, 400×.*

Different histopathological features are observed in monkeypox. Common findings are acanthosis, keratinocyte necrosis, spongiosis, ballooning degeneration, basal vacuolization, and dermal perivascular infiltration. Epidermal necrosis, viral inclusion, multinucleated giant cells, neutrophils, eosinophils, and signs of vasculitis can be found in bullae [7]. Multinucleated epidermal giant cells are a characteristic pathologic finding in viral infections such as herpes simplex, varicella zoster and measles, but their presence has also been reported in non-infectious inflammatory dermatoses, mainly when there has been chronic rubbing and pruritus [8]. The pathogenesis leading to multinucleate epithelial giant cells is unclear but two hypotheses are proposed. The first has been described as the result of inappropriate cell division and the second could be due to cell-to-cell fusion of adjacent keratinocytes and not a mitotic malfunction [8,9].

Cases of coinfection of monkeypox with other viruses have been described. Coinfection with varicella, herpes virus, molluscipoxvirus, and parapoxvirus were reported in African children [10]. Democratic Republic of Congo have found a 12 to 13% coinfection rate of monkeypox virus with varicella zoster virus in individuals presenting with monkeypox-like illnesses [11]. A study carried out in Spain identified coinfection between monkeypox and other sexually transmitted infections including *Treponema pallidum*, herpes simplex virus type 1 & 2, *Chlamydia trachomatis*, *Neisseria gonorrhoeae* and *Mycoplasma genitalium* [12]. A case of coinfection of monkeypox and cytomegalovirus with a fatal outcome has been reported [13]. The cause of death were CMV-related pneumonia, sepsis, and multiple organ failure despite treatment with intravenous ganciclovir.

Many causes of intestinal obstruction in HIV patients have been reported [14-16]. Intestinal pseudo-obstruction and intestinal obstruction have been previously reported as manifestations of cytomegalovirus [16,17], probably the underlying cause of death of our patient. Although the role of monkeypox can not be ruled out since there are reports demonstrating sigmoid, rectal, and anal wall thickening due to monkeypox [18,19].

Conclusion

Due to the varied clinical presentations, dermatologists should consider monkeypox in the differential diagnosis of ostraceous or rupioid crusts. Concomitant infections should be investigated in patients with monkeypox. Sexually transmitted diseases should be rule out especially in patients with genital and perianal ulcers.

Potential conflicts of interest

The authors declare no conflicts of interest

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