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Case Report

Severe Monkeypox Virus Associated with HIV, Hepatitis C Virus and Ulcerative Colitis: A Case Report and Literature Review

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Abstract: The orthopoxvirus, which also includes the smallpox virus, is what causes monkeypox. Several endemics have been found in Africa, mostly in the western and central parts of the continent. But since May 13, 2022, several cases have been reported from different member states. The number of proven cases in one month was higher than the total number of cases recorded outside of Africa since the first case in 1970. The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) think that monkeypox is a very important disease for the health of people around the world. Patients with monkeypox still don't know what symptoms they will have or what lab tests will show. We talk about a young man with HIV and Type C hepatitis who got a serious monkeypox virus that caused major skin problems.

Keywords: Monkeypox, Orthopoxvirus, Smallpox, Public Health, Zoonosis, Epidemiology.

INTRODUCTION

The COVID-19 pandemic has precipitated a worldwide health, economic, and political turmoil. Consequently, the global community has developed an increased level of vigilance and attentiveness towards the occurrence of any potential outbreak. Since the onset of May 2022, numerous instances of monkeypox, a zoonotic ailment primarily found in Africa, have been documented in various countries where the disease is not typically prevalent. Monkeypox, a reemerging zoonotic disease, is attributed to the monkeypox virus (MPXV), which belongs to the genus Orthopoxvirus. MPXV, also known as Monkeypox virus, is a member of the Orthopoxvirus genus and is closely related to the Variola virus, which is responsible for the development of smallpox in humans. While both viral infections exhibit numerous clinical similarities, it is generally observed that monkeypox tends to manifest with less severity when compared to smallpox. In individuals who have not received vaccinations, it has been observed that the case-fatality rate of monkeypox can reach up to 10%. However, it is worth noting that the case-fatality rates tend to be lower when the infection is caused by the West African clade of Monkeypox Virus (MPXV) compared to the Central African clade. Prior to the year 2018, the sole instances of monkeypox affecting humans outside the African continent were documented in

the United States in 2003. This particular outbreak was linked to the importation of rodents from Ghana, with no reported instances of human-to-human transmission [1].

History, Epidemiology, and Pathogenesis of Monkeypox

Monkeypox, alternatively referred to as mpox, is an affliction induced by the Orthopoxvirus, a viral genus encompassing the notorious smallpox virus, as recognized by the World Health Organization (WHO). The initial documented case of infection was recorded in 1970 within the confines of the Democratic Republic of the Congo (DRC), specifically involving a male infant at the age of 9 months. Following this, a number of endemic diseases have been documented on the African continent, predominantly in the western and central regions. Breman *et al.,* (year) provided the initial documentation of a series of suspected or confirmed cases reported between 1970 and 1980 in various African nations. A cumulative count of 48 instances has been documented across six nations, namely the Democratic Republic of the Congo (DRC) exhibiting the highest number of cases, followed by Cameroon, Côte d'Ivoire, Liberia, Nigeria, and Sierra Leone. Since the onset of the 2010s, there has been a persistent upward trend in the incidence of cases in Africa, particularly in the Democratic Republic of the Congo (DR). This surge has subsequently spread to other nations, such as Gabon and South Sudan. In the year 2017, Nigeria experienced a significant outbreak, which is noteworthy considering the absence of any reported instances of monkeypox within the country for a span of 39 years. The initial instance of monkeypox occurring outside the African continent was documented in 2003 within the United States of America. This incident transpired subsequent to an outbreak involving 47 confirmed or probable cases, which were attributed to individuals being exposed to animals that had been imported from Ghana. Following this, additional cases associated with travel were reported in various other countries. Between September 2018 and November 2021, a total of 11 instances of monkeypox were identified across four nations outside of Africa. Specifically, one case was documented in Israel in 2018, with a presumed origin in Nigeria. Additionally, another case emerged in Singapore in 2019. Furthermore, the United States experienced two cases, with one occurring in Texas in July 2021 and the other in Maryland in November 2021.A retrospective study conducted in the United Kingdom during the period of August 2018 to September 2020 revealed the isolation of the Monkeypox virus. This virus manifests as a disease characterized by pox- like symptoms. Notably, the first instance of Monkeypox virus isolation in Denmark occurred in 1950. The virus was identified in monkeys that had recently arrived from Singapore and exhibited symptoms resembling those of a pox-like disease. MPXV, also known as Monkeypox virus, is a pathogenic agent characterized by its double-stranded DNA composition [1]. This viral entity exhibits a distinctive brick-shaped morphology, measuring approximately 200–250 nanometers in size. The regulation of the cell cycle is governed by proteins that are encoded by the genome of the cell itself. This intricate process takes place within the cytoplasm of infected cells. Based on the analysis of genetic and geographical data, two distinct clades have been identified: the West African clade and the Congo Basin Group clade. The latter condition exhibits a higher degree of virulence, as evidenced by its elevated case fatality rates of 3.6% and 10.6%, respectively. Following exposure to the virus via the respiratory tract (specifically the oropharynx and nasopharynx) or direct skin-to-skin contact, the virus undergoes replication at the initial site of entry. Subsequently, it disseminates to nearby lymph nodes before gaining access to the bloodstream, thereby facilitating its dissemination to various organs throughout the body. This represents the primary incubation phase, spanning a duration of 7 to 21 days. Monkeypox is a zoonotic disease, characterized by its transmission from animals to humans. African rodents serve as the primary reservoir for this disease, and the main route of spread is through animal-to-human transmission. However, transmission via human sources has also been documented (as per a study, 72.5% and 27.5%, correspondingly). Nevertheless, the transmission of this particular chain of infection continues to exhibit a relatively low prevalence, as evidenced by a secondary attack rate that ranges from 0.3% to 10.2%, as reported in a comprehensive literature review [2].

CASE REPORT

The subject of interest is a male patient, aged 34, who has a medical background of chronic inflammatory bowel illness (cci) for a duration of 5 years. The patient's treatment regimen included the administration of mesalazine and prednisone, which was, however, terminated 3 months ago. Furthermore, the individual has received a medical diagnosis of hepatitis c virus and human immunodeficiency virus (HIV) for a duration of three years. Presently, the individual is undergoing therapy utilizing bictegravir/emtricitabine/tenofovir alafenamide, and demonstrates a commendable treatment adherence rate of 90%. the individual has successfully attained an undetectable viral load, as well as a cd4 count of 303 copies/ml. the condition initially presents as a localized dermatosis affecting the arms and face, specifically the tip of the nose and upper lip. within a span of three days, it progresses to a generalized state, affecting all body segments. this progression is characterized by the presence of over 250 papules and pustules, measuring 2-3 mm in diameter. These lesions are circular in shape, with well-defined regular edges, and exhibit a color similar to that of the surrounding skin. Some of these lesions may have hematological excisions and crusts on their surface, accompanied by serous secretion. Additionally, they are surrounded by an erythematosus halo, which is hardened to the touch. The affected individual experiences moderate intensity itching and pain, along with symptoms such as fever, non-productive cough, headache, asthenia, adynamia, myalgia, arthralgia, and odynophagia, which hinders swallowing and speaking. furthermore, ulcerative lesions are observed in the pharyngeal and palate regions. the polymerase chain reaction (pcr) technique was

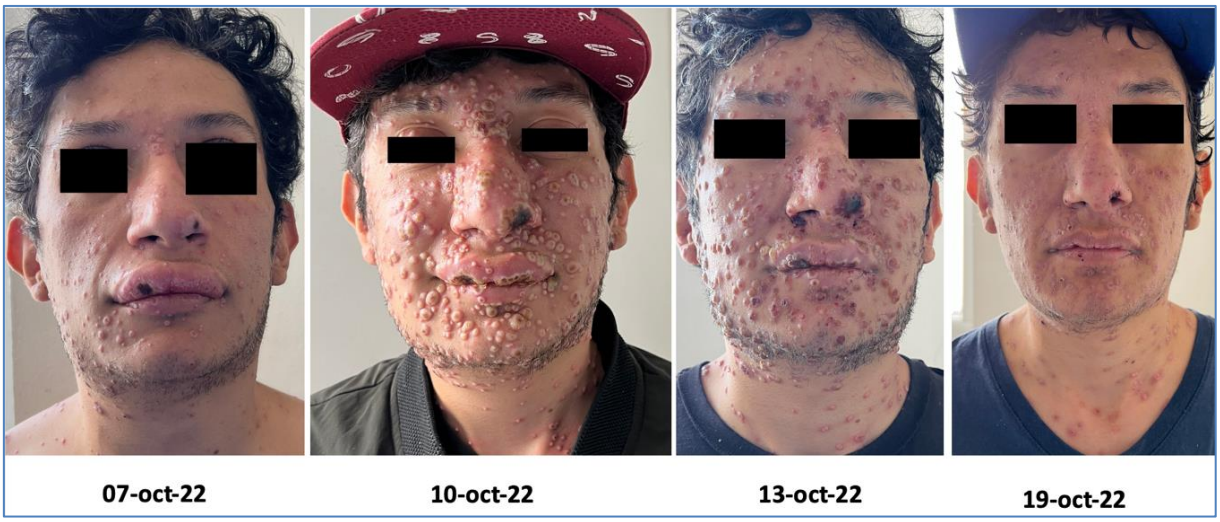
employed to detect the presence of monkeypox, resulting in a positive diagnosis. Subsequently, the patient received symptomatic therapy at home, which included the administration of paracetamol, ibuprofen, and antihistamines. The patient's condition was regularly assessed and monitored every three days, revealing satisfactory progress over a period of 25 days.

Table. Public Health England risk assessment and public health recommendations for persons potentially exposed to 2 patients with monkeypox, United Kingdom, 2018*

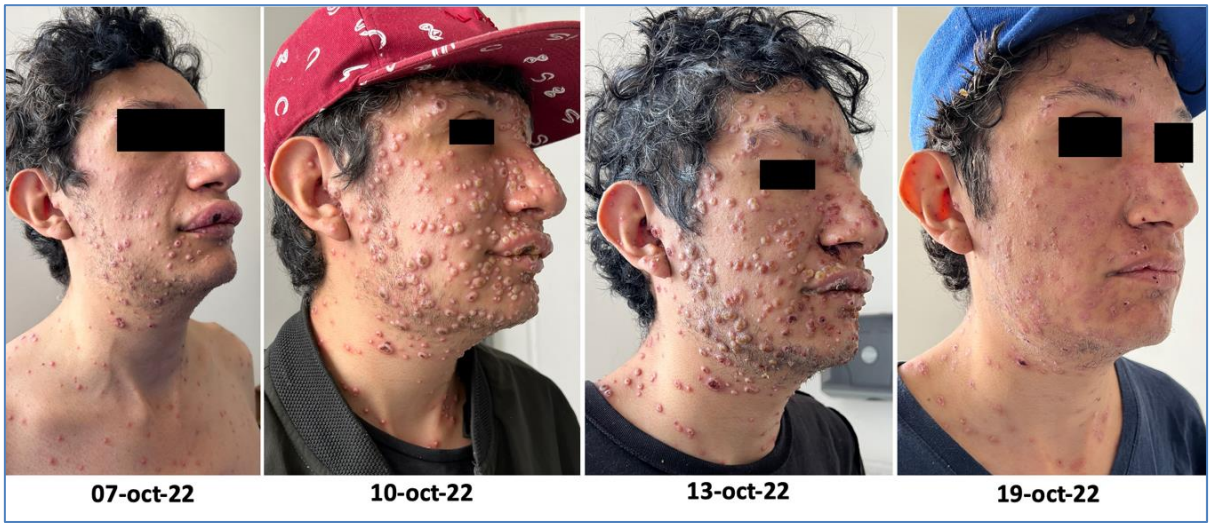
Risk group	Description	Public health surveillance	Postexposure vaccination with Imvanex	No. persons in risk group†	No. (%) persons in risk group who received postexposure vaccination†
No risk	No known contact (direct or indirect) with a symptomatic monkeypox case-patient‡ OR Laboratory staff handling specimens from a monkeypox case-patient, in a laboratory conforming to UK laboratory standards§	None	Not recommended	Not applicable	0
Low	HCW involved in care of monkeypox case-patient while wearing appropriate PPE (with no known breaches) for all contact episodes OR HCW involved in care of monkeypox case-patient while not wearing appropriate PPE for all contact episodes but not within 1 m of case-patient and with no direct contact with body fluids or potentially infectious material OR Community contact not within 1 m of case-patient	Passive¶	Not recommended	158	0
Intermediate	Intact skin-only contact with a symptomatic (with rash) monkeypox case-patient, their body fluids, or potentially infectious material# or contaminated fomite OR No direct contact but within 1 m of symptomatic monkeypox case-patient without wearing appropriate PPE (including disposable FFP3 respirator or equivalent)	Active#	Vaccination may be considered	125	84 (67)
High	Direct exposure of broken skin or mucous membranes to monkeypox symptomatic case-patient, patient's body fluids, or potentially infectious material** (including clothing or bedding) without wearing appropriate PPE (including disposable FFP3 respiratory or equivalent). Exposure includes inhalation of respiratory droplets or material from scabs from cleaning rooms where a monkeypox case-patient has stayed, mucosal exposure to splashes, penetrating injury from used sharp device or through contaminated gloves or clothing	Active#	Vaccination recommended	5	5 (100)

*Imvanex (modified vaccinia Ankara, Bavarian Nordic, http://www.bavarian-nordic.com) was approved by the European Medicines Agency in July 2013 for active immunization against smallpox in adults. Jynneos (modified vaccinia Ankara; Bavarian Nordic) was approved by the US Food and Drug Administration in September 2019 for the prevention of smallpox and monkeypox disease in adults ≥18 y of age determined to be at high risk for smallpox or monkeypox infection. FFP3, filtering facepiece 3; HCW, healthcare worker; PHE, Public Health England; PPE, personal protective equipment.
†For patients 2 and 3 combined.
‡Case-patients are considered potentially infectious 24 h before the onset of rash.
§See http://www.hse.gov.uk/pubns/books/clinical-laboratories.htm.
¶A person requiring passive surveillance is given information about monkeypox and what to do if illness develops.
#A person requiring active surveillance is given information about monkeypox and instructed to report health status daily to PHE, regardless of symptoms, for 21 d from the date of most recent exposure, and to report any illness immediately. In addition, HCWs with high-risk exposures are to be excluded from work for 21 d after the most recent exposure (note this recommendation was introduced after diagnosis of the third case-patient).
**Potentially infectious biological material consists of skin lesions and detached scabs.

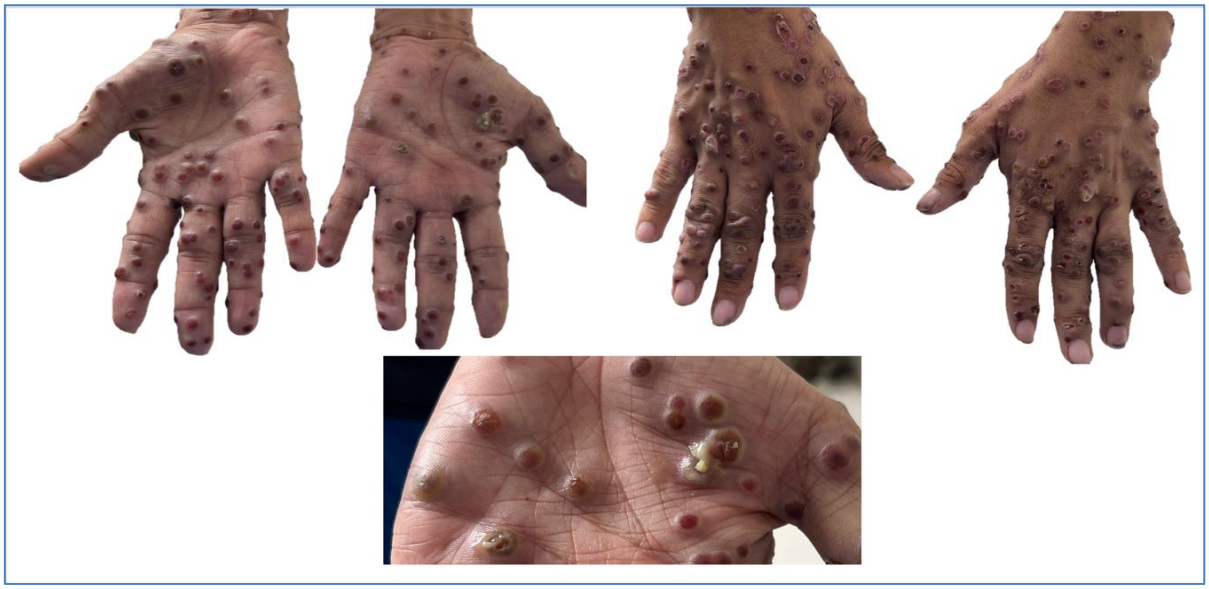
FIGURES



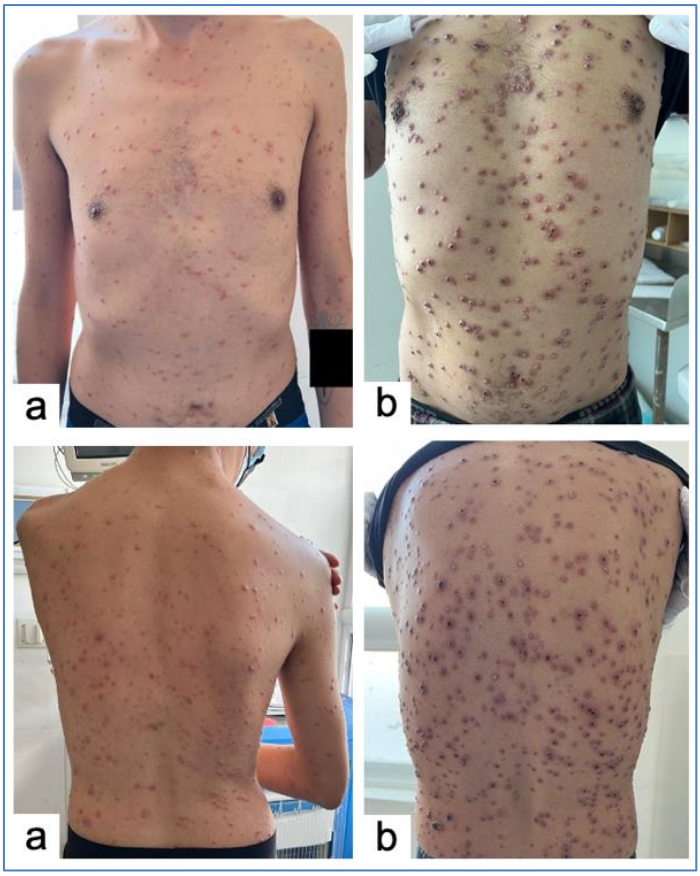
1. Generalized dermatosis, at the 3 days of the initial injury, more than 250 papules and pustules of 2-3 mm



2. Dermatosis 6 days later, papulovesicles with an increase of 1 to 2 mm in diameter, serous secretion, hardened to the touch.



3. Observing papulovesicles with center and halo erythematosus, serous secretion, hardened to the touch



A. Generalized dermatosis. B. Dermatosis at Day 6, observing papulovesicles with an increase of 1 to 2 mm in diameter, secretion, hardened to the touch. C. Dermatosis 9 days later in different stages of evolution D. Dermatosis 25 days later, post-inflammatory residual lesions.

DISCUSSION

The precise clinical manifestations and laboratory findings in individuals afflicted with monkeypox continue to elude our understanding. Numerous clinical case studies have been conducted with the aim of acquiring a more comprehensive understanding of the pathological aspects associated with this viral infection. According to the reports issued by the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC), the national authorities have formulated specific case definition criteria for each outbreak. Nevertheless, it is crucial to note that the clinical manifestation of monkeypox bears similarities to various viral infections such as varicella, herpes, and syphilis, among others. Consequently, it becomes imperative to establish a more precise definition to ensure precise identification of cases, thereby minimizing the need for unnecessary sampling and preventing undue patient isolation and the resulting stress caused by isolation prior to confirming the diagnosis. The prodromal symptoms that frequently occur prior to the manifestation of the cutaneous rash, typically within a timeframe of 1 to 3 days, and occasionally extending up to a maximum of 2 weeks, encompass fever, headache, chills, myalgia, and back pain. Nevertheless, it is important to note that not all patients will manifest these aforementioned symptoms. In a study conducted by Yinka *et al.*, it was observed that fever was found to precede the occurrence of rash in a mere 57% of the patients. [3].

The rash associated with monkeypox is characterized by a gradual progression from maculopapular to vesicular or pustular lesions. These lesions then proceed to form crusts before ultimately undergoing desquamation, or shedding of the outermost layer of skin. This entire process typically occurs over a span of 2 to 4 weeks, with unaffected skin areas observed between the individual lesions. Nevertheless, this clinical manifestation bears a striking resemblance to that of various ailments, notably chickenpox, which are frequently encountered in the realm of routine medical practice. Numerous studies have documented that the rash associated with monkeypox exhibits clinical characteristics of monomorphism, wherein all lesions appear to be in the same stage of development during evaluation. Nevertheless, several additional reports have contradicted these aforementioned findings. [4].

The rash exhibits additional characteristics such as centrifugal distribution and lesions localized on the palmoplantar or genital areas. Lesions affecting the male genital region may exhibit the presence of necrotic crusts or paraphimosis, while lesions in the rectal area can give rise to discomfort during defecation or proctitis.

Lymphadenopathy, specifically in the axillary, inguinal, and/or cervical regions, serves as a notable indicator that distinguishes infection caused by Monkeypox virus (MPXV) from other comparable medical conditions. Lymphadenopathy, characterized by the enlargement of lymph nodes, has been observed to manifest either prior to or concurrently with the appearance of the rash. Its occurrence has been reported to range from 35% to 75% in affected individuals. Ulcerations may be observed within the oral mucosa, tongue, and pharynx, thereby imposing restrictions on oral intake. Complications and severe infection, which have been documented to be linked to the Congo Basin clade, have the potential to induce encephalitis, pneumonitis, corneal ulceration, keratitis, and secondary bacterial infections. Hence, it is imperative to note that infection caused by MPXV can manifest in a multitude of clinical presentations. In order to ascertain an accurate diagnosis, it is crucial to rely on laboratory examinations as an indispensable tool for confirmation. [5].

CONCLUSION

Considered to be a significant risk factor for the development of monkeypox is the presence of many disorders, each of which might result in immunocompromised states. At present, we lack definitive data to establish a correlation between human immunodeficiency virus (HIV) infection, hepatitis C virus infection, and chronic inflammatory ulcerative colitis. Nevertheless, it is imperative to persist in contemplating the inherent molecular mechanisms that may ascertain a potential correlation. Henceforth, it is crucial to bear in mind that the existence of multiple immunocompromising ailments or the utilization of medications like steroids might be deemed a risk factor for the emergence of severe monkeypox. Henceforth, it is strongly advised to uphold diligent observation in these instances.

CONFLICTS OF INTERESTS

The authors have shown no conflicts of interest, ensuring the integrity and objectivity of their study results.

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