

Monkeypox Among Patients on PrEP – a Case Report

Aleksandra Bulović*, Vedrana Petrić, Vanja Andrić, Nina Đurić, Slavica Tomić, Maria Pete

Clinical Center of Vojvodina, Novi Sad, Serbia

Corresponding Author:

Aleksandra Bulović, MD
Clinical Center of Vojvodina, Novi Sad,
Serbia
saskab94@hotmail.com

ABSTRACT Monkeypox is a viral zoonosis belonging to the genus Orthopoxvirus. Until now, cases of monkeypox were mostly isolated to endemic areas, however, many cases that do not even mention travel to the countries of Central and West Africa have appeared throughout Europe in the past year. The virus manifests itself as an outbreak of skin lesions followed by a general infectious syndrome. The frequent occurrence of skin lesions concentrated around the anogenital region was also seen in patients belonging to the MSM (Men Who Have Sex with Men) population, who admitted risky sexual relations. In this paper, we have presented a 28-year-old man who came to the University Clinical Center of Vojvodina with skin lesions in the genital area and was diagnosed with monkeypox infection by PCR multiplex from the lesions. The main goal of this case report is to determine the way the virus is transmitted and its clinical manifestations, to show diagnostic methods, as well as possible prevention measures and treatment options.

Monkeypox is a re-emerging viral zoonosis caused by the monkeypox virus (MPXV), which belongs to the genus Orthopoxvirus. A great interest in this virus has aroused in the past year when monkeypox became widespread in European countries that are not considered to be its endemic area. MPXV belongs to the same genus of viruses as the variola virus and causes a similar clinical picture. Although these two viruses share many clinical characteristics, monkeypox is more difficult to transmit than the variola virus, causes a milder clinical picture, and leads to a fatal outcome in a significantly lower percentage (1). MPXV was first registered in Central Africa in 1970 and has historically affected some of the poorest and most marginalized communities in the world (2). In order to obtain a clearer picture of the virus, genomic sequencing of MPXV isolates from several cases diagnosed in West and Central Africa was performed, and it was concluded that there are two subtypes of the virus, named the West African clade and the Central African clade (Congo Basin). Differences observed be-

tween these two clades included facts that the West African clade causes a milder clinical picture, a milder course of the disease, and leads to the death of the host in a smaller percentage (3). Human-to-human transmission of MPXV outside the endemic area was first recorded in the UK in 2018 and was considered rare. However, on May 23, 2022, nine EU member countries also registered cases of MPXV (Austria, Belgium, France, Germany, Italy, Portugal, Spain, Sweden, and the Netherlands) (4) (5). Considering the occurrence of MPXV in European countries that are not considered to be its endemic area, we have presented the case of a 28-year-old patient with a clinical presentation of a proven MPXV infection.

CASE REPORT

A 28-year-old man without comorbidities was admitted to the Clinic for Infectious Diseases of the University Clinical Center of Vojvodina on July 2, 2022, on the fifth day of disease for examination of skin lesions



Figure 1. Ulcerative lesions around the genital region on the fifth day of the disease

localized in the genital region that had appeared a few days before the admission. The patient stated that he had previously stayed in the Netherlands in the period from June 15 to July 1, where, according to him, he had unprotected sexual intercourses on June 25 and 26. Before the trip, the patient was tested for sexually transmitted diseases, and the analyzes performed included HBsAg, anti-HCV, VDRL/TPHA, and anti-HIV. All tests were negative, which allowed him to take pre-exposure prophylaxis (tenofovir disoproxil fumarate/emtricitabine) because of the planned unprotected sexual intercourses. The patient's symptoms gradually began from June 28, when weakness and lassitude appeared. The next day, on June 29, he noticed in the first act enlarged lymph nodes in the groin, followed by changes in the skin of the genital region. New changes appeared in the genital area the following day when he began to feel muscle pain. On June 30, he developed an elevated temperature that went up to 40C, and on the day of admission, he consulted a doctor for the first time and was referred to the Clinic for Infectious Diseases of the University Clinical Center of Vojvodina. On admission, in objective findings, the patient was eupneic at rest with SpO₂: 98%, RR: 16/min, normocardic HR: 83/min, normotensive BP: 115/65mmHg, without signs of dehydration and intoxication, with a slightly hyperemic pharynx. On the skin of the arch of the feet, upper legs, glutes, and back, as well as on the anterior chest wall, rare papular skin lesions were observed, while darker ulcerative lesions up to 5 mm in size were visible on the skin of the genital region (number of lesions in the genital region <10), with erythema present around the changes (Figure 1,2).

Palpable lymph nodes, with a painful sensitivity to touch, were also observed in both groins, with



Figure 2. A popular lesion on the skin of the left upper leg on the fifth day of the disease

the unchanged skin above. Laboratory findings on admission verified neutrophilia 70.3%, lymphopenia 19.8%, elevated C-reactive protein (CRP) 20.3 mg/L, slightly elevated D-dimer 0.99 ng/L with other normal biochemical parameters of kidney and liver function. No signs of pneumonia were described on the radiograph of the lungs, and upon admission, a PCR multiplex was sampled from the skin changes for MPXV, which arrived positive the following day. Upon admission, antibiotic therapy of ceftriaxone was included along with other symptomatic therapy. After admission, the patient complained of itching of the lesions and headache. For the following two days, he continued to febrile up to 38.8C. On July 4, new pustular lesions appeared in the area of the feet (Figure 3). There was also suprapubic erythema about 10 cm wide, painful on palpation and of hard consistency.

On the ultrasonographic examination of the inguinum on the third day of hospitalization, individual reactive lymph nodes were observed, more pronounced on the left, the dimensions of the largest being 41x32mm, while in the suprapubic region, at a depth of about 30mm, an anechoic, round formation with intraluminally present organized hyperechoic content was recorded. In the laboratory findings from July 4, a further increase in C-reactive protein of 30.4 mg/L was recorded, and azithromycin was introduced along with the existing antibiotic therapy. During hospitalization, the patient's urine culture and blood culture were sampled, which were both negative. Analyzes for sexually transmitted diseases were also performed, including HBsAg, anti-HCV, PCR HIV, and VDRL/TPHA, along with a bacteriological anal swab, which were also negative. In the further course



Figure 3. A pustular lesions on the skin of the arch of the right foot on the seventh day of the disease

of hospitalization, the patient was afebrile all the time with regression of the existing skin lesions and epithelization of the crusted lesions around the genital region, with complaints of the pain of the crusted lesions. On July 8, three new papular lesions appeared, one on the dorsum of the left foot and two on the skin of the right lower leg. In the laboratory findings from July 11, a decrease in pro-inflammatory markers was recorded with C-reactive protein values of 2.3 mg/L, and a slight increase in liver enzymes ALT 89 U/L, AST 70 U/L. As his further condition was stable, with no fever, normal pro-inflammatory markers, absence of new changes, and regression of throat hyperemia, the patient was discharged for further home treatment on July 13 with a suggestion for multivitamin supplementation.

At the follow-up examination 3 weeks after hospitalization, the patient stated that subjectively he no longer had any complaints, the crusted lesions epithelized completely, and there were residual hypopigmentation zones on the back in places of previous papular lesions (Figure 4).

In the control laboratory findings, an entirely normal complete blood count was recorded, with normal values of pro-inflammatory parameters and liver enzymes.

DISCUSSION

In our work, we have presented the first case of MPXV infection recorded in the University Clinical Center of Vojvodina, and the second case in Serbia. Since the appearance of MPXV infection outside of



Figure 4. Residual hypopigmentation zones in the genital region

its endemic areas, there has been a great interest in this virus, its clinical manifestations, the transmission mode of the infection, as well as various diagnostic and therapeutic options. According to a paper published by the London "Health Care" clinic, all of the respondents identified themselves as MSM, and almost all of them had skin lesions in the anogenital region with associated symptoms of a general infectious syndrome. This supports the theory that in most cases there is a local transmission with close skin or mucosal contact, which is consistent with our patient who also identified himself as MSM and had skin lesions in the genital area (6,7). Furthermore, information obtained in other research indicates the use of pre-exposure prophylaxis, which suggests the existence of unprotected sexual relations before the onset of infection, as well as that this is precisely the way of transmission of the viral infection in the sense of close contact with lesions on the skin and mucous membranes (4,8,9). Regarding the clinical manifestations of the infection, in the majority of confirmed cases in Europe, there was a prodromal period followed by symptoms of a general infectious syndrome, followed by the appearance of skin lesions most pronounced at the site of primary inoculation. The incubation period lasts up to 14 days, which coincides with the case of our patient who developed skin changes in the genital area 5 days after having unprotected sexual intercourse. As in our case, patients reported muscle pain, elevated body temperature, lymphadenopathy, and skin lesions in the stages of pustules, papules, ulcerations, or crusts (2,10,11,12). Skin changes occurred in different time intervals, which resulted in the existence of changes in different stages, localized in several regions of the body (13,14). According to other studies, immunization against smallpox provides partial protection against

the MPXV virus, given the close kinship of these two viruses (12,15). Unfortunately, our patient was not immunized against smallpox.

The existence of a damaged skin barrier, i.e. the existence of ulcerative changes on the skin and mucous membrane, leaves room for secondary bacterial superinfection and the possibility of the appearance of cellulitis, which has been described in many other works, and even the appearance of septicemia (6,16,14). It is precisely because of these data, as well as the potential existence of co-infection with lues or some other sexually transmitted infection, that the use of intravenous antibiotic therapy is resorted to in most cases (4,6,16).

Since MPXV infection has appeared in European countries this year, a more severe clinical picture, that is, the emergence of disease complications, which include sepsis, pneumonia, etc., has been recorded in a small percentage of cases. As it is already known that there are two strains of the virus, the West African and the Central African strain, and that the West African strain implies a milder clinical picture, the theory that it is the cause of the current MPXV epidemic has emerged. This was confirmed in multiple samples by PCR sequencing of existing cases of MPXV infection currently prevalent in Europe (18, 19, 20). In our institution, PCR multiplex from skin lesions was the only type of diagnostics available, and it was used as a diagnostic tool, limiting us in possible further diagnostics such as PCR sequencing.

CONCLUSION

MPXV has become widespread outside its endemic areas, and the importance of considering the possibility of infection in European countries in individuals who have not traveled to West and Central African regions and the occurrence of an epidemic must be emphasized. In our case report, as well as in many others, according to literature data, there is information about the existence of skin lesions that are more pronounced in the anogenital region, with local lymphadenopathy as well as certain skin changes outside the site of primary inoculation, which has not been a characteristic of MPXV infection until now. Moreover, the importance of testing for other sexually transmitted diseases must be emphasized, given the frequent data on unprotected sexual relations, the clinical picture of MPXV in which the changes in the majority of cases are most pronounced in the anogenital region, as well as proven co-infections with sexually transmitted diseases, which are listed in numerous works. The mitigating circumstance of the current epidemic outside African countries is that a milder form of MPXV infection currently prevails, which does not

exclude the possibility of the appearance of the Central African clade, which implies a more severe clinical presentation, and a higher percentage of death.

From all that has been stated so far, the importance of thinking about MPXV infection in European countries, adequate approach to the patient, his diagnosis, prevention, and treatment should be emphasized.

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