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Case Report

Monkeypox Outbreak-Case Report

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Abstract

A zoonotic disease, monkeypox virus disease, appeared once in the west and central Africa. On July 23, 2022, the WHO designated the current monkeypox epidemic a public health emergency of worldwide concern in the context of the COVID-19 pandemic. The rapidly growing number of confirmed cases may endanger international society. According to current epidemiological statistics, the high frequency of human-to-human transmission might lead to more epidemics, particularly among males who have sex with men. Despite some therapeutic effects of presently used medications in the clinic, the development of antiviral treatments and vaccines against the monkeypox virus is urgent.

Keywords: Monkeypox; Covid-19; Pandemic; zoonotic disease; Antiviral treatment.

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Introduction

The monkeypox virus causes monkeypox disease, which is similar to smallpox. It is not frequent and causes rash and flu-like symptoms such as chills and fever. Usually, it is found in certain areas of Africa. In 1958, monkeypox was discovered after two outbreaks of a pox-like disease in study groups of monkeys.

It is mostly transmitted by human contact with infected rodents; however, it can also be transmitted through skin-to-skin contact with an infected person. Monkeypox virus has two recognized kinds (clades); one that arose in West Africa and the other that derived in Central Africa. The moderate West African clade is responsible for the current global outbreak (2022). Monkeypox was largely observed throughout Africa for decades. It is, nevertheless, present in other nations, including the United States. The first epidemic of monkeypox outside of Africa occurred in the United States in the spring of 2003. Texas received a consignment of sick animals from Ghana. The virus was carried by infected rodents to pet prairie dogs, who ultimately infected 47 humans in the Midwest [1]. As international travel becomes more

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widespread, diseases that were formerly isolated to certain areas can more readily spread over the world. A case of monkeypox was discovered in a U.S. resident who had traveled from Nigeria to the United States in the summer of 2021. Then, in 2022, outbreaks spread to regions outside of Africa, including America, Australia, and Europe.

Symptoms of monkeypox

Monkeypox is more likely to cause rash near genitals such as the testicles, penis, vagina, labia, or anus. It could also cause a rash on feet, hands, face, chest, or mouth. The rash has various stages, including scabs, before recovery. At starting, it seems like blisters or pimples; however, they still can be itchy and painful. Other common symptoms of monkeypox may include chills, fever, exhaustion, swollen lymph nodes, backache, headache, muscle aches, and respiratory symptoms such as nasal congestion, sore throat, and cough. Most of the time, before the rash, people experience flu-like symptoms. Some may undergo other symptoms along with a rash, while others may only have a rash [2]. These indications of monkeypox are usually initiated within 21 days of virus exposure. People with flu-like symptoms are most likely to develop a rash 4 days later. Whenever individual experiences symptoms of monkeypox, he becomes prone to pass the virus to others before proper recovery. However, when the fresh layer of skin is developed, and the rash heals completely, the susceptibility to virus exposure decreases.

Transmission of monkeypox virus

Monkeypox is caused by a virus, named monkeypox virus, which can be transmitted through close contact with humans or animals, who are infected already. Sometimes, the virus transmits to an individual by handling materials such as blankets with infected people. An infected individual can spread the virus to another person by direct contact with scabs, rashes, or body fluids. Or if both are in close contact for more than 4 hours, including sexual contact. The virus can also be transmitted through sheets, clothes, or other materials that have been in contact with body fluids or rashes with an infected person. However, the animal-to-human spread of the monkeypox virus may include animal scratches or bites, pox lesions (sores), and infected animals' products. It can also be spread through direct contact with rashes or body fluids of infected animals [3].

Diagnosis of monkeypox

Rash illnesses can be mistaken for chickenpox and measles. However, they can be distinguished from monkeypox by swollen lymph nodes. Usually, healthcare providers may take a sample of tissue from a lesion or an open sore. It then undergoes polymerase chain reaction (PCR) testing (genetic fingerprinting) in the laboratory. In some cases, a blood sample is also required to analyze the antibodies that the immune system produces in defense [4].

Is monkeypox curable?

A self-limited disease, the monkeypox virus disease often lasts the symptoms from two to four weeks. The majority of individuals with monkeypox recover without therapy. Following a diagnosis, the healthcare practitioner tends to monitor the condition of the patient, avoid dehydration, attempt to ease the symptoms, and prescribe antibiotics to treat any secondary bacterial infections

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that arise [5]. There is no authorized antiviral therapy for monkeypox at the moment. Antiviral medications may be beneficial, although they have not been investigated as a therapy for monkeypox. There are various studies investigating antivirals with anti-monkeypox activity available, but only as part of a research study.

Treatment

Tecovirimat

Other names of Tecovirimat are ST-246 and TPOXX. It is approved by Food and Drug Administration (FDA) to treat human smallpox caused by the Variola virus in children and adults. It can also be used for other orthopoxvirus infections, such as monkeypox.

However, FDA has not approved it yet. Its efficacy and safety are yet to be identified for the patients of monkeypox disease. National Institute of Allergy and Infectious Diseases (NIAID) conduct two clinical trials to check the efficacy of tecovirimat for patients with monkeypox disease. 500 adults with severe infection and children were taken, and the investigators found that the participants treated with tecovirimat were more likely to heal rapidly as all lesions were flaked off compared to the placebo.

Oral and IV routes dosages that are prescribed includes

Tecovirimat is available as a 200mg oral capsule and an intravenous (IV) injection. Oral formulation drug absorption is contingent on the concomitant consumption of a full, fatty meal.

The treatment can proceed for 14 days; however, if the progression of the disease does not stop, it can be used for 90 days (but not more than 90 days).

Brincidofovir (Tembexa)

The National Institute of Allergy and Infectious Diseases supported Brincidofovir (Tembexa) to treat smallpox. NIAID financed the drug's discovery, preclinical development, and early clinical testing, as it did tecovirimat; BARDA funded its advanced clinical review. Based on animal efficacy results, the FDA authorized Brincidofovir for oral administration as a smallpox therapy in adults and pediatric patients, including newborns, in 2021. Aside from these two drugs, NIAID is still screening new compounds for possible antiviral options to treat monkeypox and other pox viruses. Hydroxyzine and Ibuprofen medications can also be used to treat monkeypox. These medications can also help manage symptoms of monkeypox disease.

Case report

25-year-old male with a PMH of bronchitis arrives to the ER with headache, backache and low-grade fever. Patient confirms having these symptoms for the past couple of days but noticed a blister on his right hand today. Due to the recent outbreak and sight of blister and evaluation of symptoms the patient was screened for Monkeypox virus which showed detection of infection. The patient was treated with a combination of Tecovirimat 600, Hydroxyzine 25mg, and Ibuprofen 600mg. The health department of Florida was contacted, and the patient was sent home to isolate.

The patient was contacted a week later and advised was fully broken out in a painful rash. Patient described the rash to be raised bumps

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filled with a clear fluid. Patient was advised to continue the course of the treatment provided. A week later, the patient was contacted and advised the pus bumps were crusting and scabbing. By this point the patient had approximately a week left of treatment. Patient confirmed good health and soon got fully recovered. Patient did note that the first blister that erupted was the last blister to heal.

Figure 1: Display of initial blister on right hand as described on case.

Figure 2: Display of final blister healed as described in case.

Prevention

It is necessary to follow prevention steps to stop the transmission of the monkeypox virus.

These steps may include:

- Do not create close contact with individuals who have symptoms of monkeypox, including rash.
- Handling blankets, clothing, linens, or other things that have come into touch with an infected human or animal should be avoided.

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- Patients with monkeypox should be isolated to stay away from healthy individuals and stop the transmission.
- After contact with an infected person or animal, thoroughly wash your hands with water and soap.
- Avoid animals that may be infected with the virus.
- Make use of dental dams and condoms while having sex to avoid getting or transmitting monkeypox.
- When caring for people infected with the virus, it is essential to wear personal protective equipment (PPE).
- When infected people are around, it is necessary to wear a mask that covers the mouth and nose.
- There are vaccines available that can prevent monkeypox, such as Jynneos and ACAM2000 vaccines. Monkeypox and smallpox are caused by similar viruses, and these vaccines are beneficial to prevent monkeypox.

Complications

Severe scars on the face, arms, and legs are possible sequelae of monkeypox. The complications associated with monkeypox also include blindness and other diseases, and in rare situations, it can lead to death. The West African strain of the monkeypox virus, which is spreading in the 2022 epidemic, seldom causes mortality [6]. Monkeypox is uncommon in the United States, and the monkeypox virus does not easily spread between people without close contact.

Conclusion

Monekypox is one of the leading epidemics caused by the monkeypox virus. It can be transmitted by skin-to-skin contact with an infected person. The symptoms of monkeypox include genital inflammation. Moreover, the mouth, face, or feet can also be affected by the monkeypox virus. Infected people are more likely to have a fever, headache, back pain, sore throat, and chills. However, it can be diagnosed through a blood sample or tissue from an open sore. There are various medications that are used to treat monkeypox, including Tecovirimat and Brincidofovir.

However, these medications are also approved to treat smallpox. People who have a higher risk of monkeypox should follow prevention by using masks to cover their face and mouth, utilizing condoms during intercourse, and wearing PPE. Because according to the old saying, prevention is always better than cure.

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