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A Review:

Diagnosis and Treatment of Monkeypox Patients

Salwa Hamza Hussein[1], ZainabAbd al-azim Dakil[2], Batheena Abed alhassan Nasser[3]
Department of Biology, College of Education for Girls, Kufa University, Kufa, Iraq

Abstract. A viral illness impacting children and young adults, it commences gradually and the infection can be minor. A significant proportion of patients progress to the acute stage of the infection. The condition progresses in the acute phase to encephalitis, myocarditis, pneumonia, and ocular complications in severe instances. The monkeypox viral infection constitutes a significant global public health issue. The nation carries the highest burden of monkeypox infections internationally and will significantly contribute to the eradication of this disease worldwide. Despite the country's significant advancements in mitigating monkeypox virus infections in prior years, Iraq currently encounters obstacles in its objective to diminish the fatality and morbidity rates associated with monkeypox. In alignment with the WHO global health sector policy on monkeypox, we emphasise additional priority for action to eradicate this virus in Iraq, aiming to accomplish the objective of lowering death, and we recommend prioritising service coverage targets for diagnosis and treatment. Initially, it is essential to enhance the diagnostic and therapeutic capabilities of medical facilities and healthcare professionals. Secondly, the government must alleviate the financial strain of healthcare on patients. Third, improved coordination of current national initiatives and resources is essential to create an integrated prevention and control system encompassing the prevention, screening, diagnosis, and treatment of HIV infection and monkeypox across the life cycle. Thus, advancement can be achieved in the objective of eradicating monkeypox in Iraq.

Highlights:

1. Gradual onset illness affecting children, causing severe complications in acute stage.
2. Iraq faces challenges in reducing monkeypox fatality and morbidity rates.
3. Focus: Enhance healthcare, ease costs, and improve prevention coordination.

Keywords: Mpox, Health problem, Infection, Diagnosis and treatment.

Introduction

Monkeypox was initially identified in 1958 during an outbreak of a smallpox-like illness in study colonies of monkeys. Monkeypox is an uncommon viral illness caused by a virus from the Orthopoxvirus genus within the Poxviridae family, which also include the Variola virus. Monkeypox, or Mpox, is a disease caused by the smallpox virus, a viral infection that primarily transmits between individuals by direct contact and occasionally from contaminated objects and surfaces to individuals afflicted with monkeypox. [1].

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Monkeypox is predominantly marked by a widespread rash accompanied by cutaneous lesions. The rash is transmissible, and the skin lesions typically commence on the face before disseminating to other areas of the body. It produces a variety of signs and symptoms; some individuals may exhibit milder manifestations, while others may progress to more serious illness. Severe Mpox may result in extensive lesions, especially in the oral cavity, ocular region, and genitalia, as well as subsequent bacterial infections affecting the skin, bloodstream, or lungs [3]. The virus is spread reciprocally between people and animals across diverse habitats. Individuals with proven or suspected Mpox infection should refrain from close physical contact with animals, especially pets. Complications of monkeypox infection may encompass severe facial, arm, or leg scarring, eyesight impairment, and, in rare instances, mortality. Individuals belonging to a demographic at elevated risk of monkeypox infection Vaccines are a component of our strategy to safeguard communities against Mpox and should be implemented alongside other public health and social interventions. [6].

Methods

The methodology for the article on monkeypox diagnosis and treatment is grounded in a comprehensive review of current diagnostic and therapeutic practices. The research approach involves analyzing existing literature, official guidelines, and WHO recommendations on monkeypox management. This examination of peer-reviewed studies and clinical trials focuses on diagnostic testing methods, especially RNA detection via polymerase chain reaction (PCR), which is emphasized as the primary diagnostic tool due to its accuracy in identifying the monkeypox virus from skin lesions. The methodology also examines WHO-approved antiviral treatments, such as Tecovirimat and Brincidofovir, evaluating their effectiveness in clinical settings.

Additionally, the study investigates the efficacy of vaccines like ACAM2000 and MVA-BN, both utilized in smallpox prevention but adapted here for monkeypox. Data collection from recent case studies and clinical trials provides insight into the safety and immunogenicity of these vaccines. The study also reviews policies on vaccination eligibility, suggesting that immunization should be prioritized for high-risk individuals. The methodology's reliance on qualitative analysis enables a thorough synthesis of

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current prevention, diagnostic, and treatment methods, aiming to offer a well-rounded assessment of best practices in monkeypox management and inform strategies to lower infection rates.

Result and Discussion

Monkeypox is transmitted from animals to humans in the following ways: exposure to a bite or scratch from an infected animal, eating meat or wild birds that are cooked to be eaten, using products made from infected animals such as hides and fur, and direct exposure to the rash or body fluids of an infected animal[7].

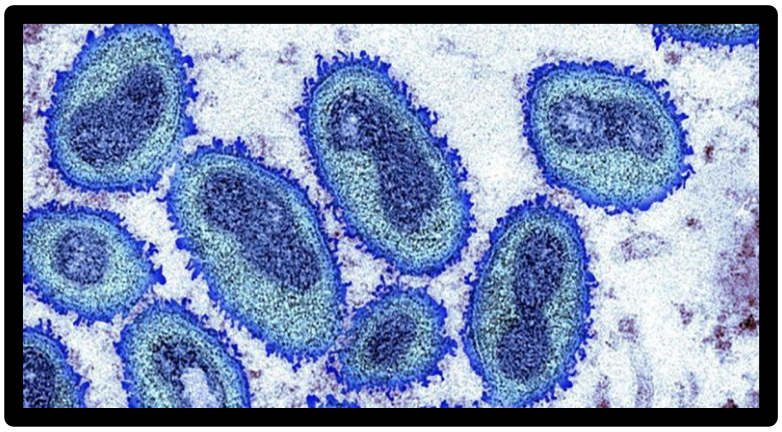

Image (1): Shows monkeypox virus.

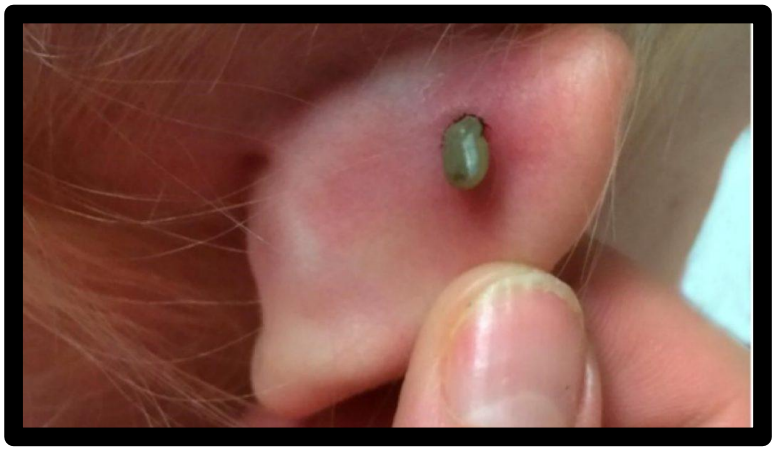

Image (2): Shows the tick that transmits monkeypox virus.

Incubation period:

Monkeypox symptoms may appear within three to seventeen days after exposure to the virus. The duration from viral exposure to the onset of symptoms is known as the

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incubation period of the virus. The length of monkeypox symptoms ranges from two to four weeks. [8]

Infectious agent:

Monkeypox is caused by the virus of the same name (monkeypox virus), which is related to smallpox virus, and causes a similar, but usually milder disease. Monkeypox is caused by monkeypox virus, which is related to smallpox virus. The rash is the most obvious symptom [9].

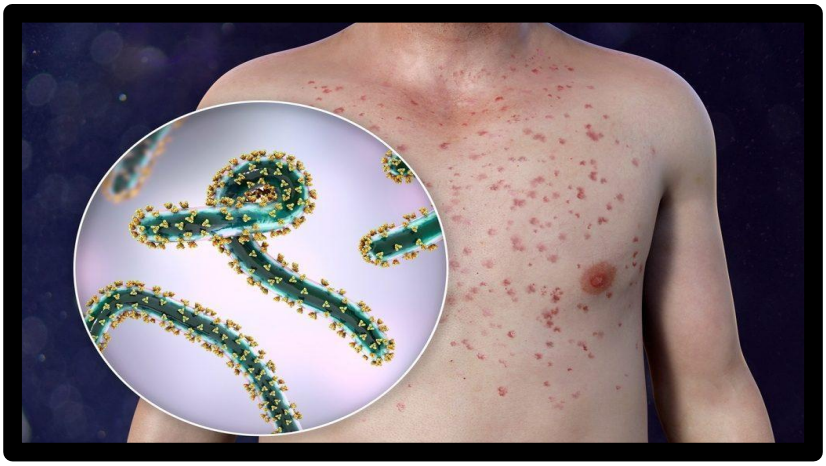

Image (3): Shows the skin rash of a person infected with monkeypox virus.

Symptoms and signs:

Monkeypox may present a range of signs and symptoms. Some individuals have lesser symptoms, while others may experience more serious disease requiring medical intervention at a hospital centre.

Common symptoms of monkeypox include a rash that can last from 2 to 4 weeks. Preliminary symptoms may encompass fever, headache, myalgia, lumbar discomfort, tiredness, and lymphadenopathy. The rash resembles vesicles or lesions and may affect the face, hands, soles, groin, and genital areas. These lesions may also present in the oral cavity, pharynx, anus, rectum, vagina, or ophthalmic region. The number of sores may range from one to many thousand. Certain individuals suffer from rectal inflammation (proctitis), which can be quite uncomfortable, along with vaginal irritation, resulting in urination issues. Generally, monkeypox symptoms resolve independently after a few weeks with the support of therapeutic measures, such as analgesics or antipyretics. In certain individuals, the illness may present severely, leading to complications or even death. Newborns, children, pregnant women, and anyone with

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compromised immune systems, such as those with advanced HIV disease (AIDS), may face an increased risk of severe monkeypox illness and mortality. Severe monkeypox can lead to widespread lesions, particularly in the oral cavity, ocular region, and genitalia, along with secondary bacterial skin infections or systemic illnesses impacting the bloodstream and lungs.

The rash usually first appears on the face, hands, or feet, subsequently spreading to other areas of the body. In cases associated with the outbreak that began in 2022, the rash often developed in the vaginal area, oral cavity, or pharynx. The rash caused by monkeypox evolves through several stages. It first presents as flat lesions that progress to blisters. The blisters amass purulent fluid, eventually form crusts, and dissolve after two to four weeks. Monkeypox infection is transmissible during the symptomatic phase, which spans from the onset of symptoms to the disappearance of the rash and crusts. Monkeypox can be transmitted to humans by direct contact with an infected person, contaminated goods, or infected animals.

How is monkeypox transmitted:

From wildlife to Homo sapiens The virus can also be transmitted to persons who come into contact with infected animals, including specific species of monkeys and wild rodents, such as tree squirrels. Physical interaction with an animal or its flesh may transpire through bites or scratches, or during endeavours such as hunting, skinning, trapping, or food preparation. The virus may also be acquired by the consumption of undercooked contaminated meat. [12]

Transitioning from Homo sapiens to non-human animals Numerous animal species are identified as sensitive to monkeypox, indicating a potential for the virus to be transferred back to animals under varied circumstances. Individuals with confirmed or suspected Mpox infection should avoid close physical contact with animals, particularly pets (e.g., cats, dogs, hamsters, gerbils), livestock, and wildlife. [13]

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Image (4): Shows the skin rash of a person infected with monkeypox virus and the disease transmission medium.

Complications of monkeypox:

Problems of monkeypox may include severe bacterial infections of skin lesions, as well as encephalitis, myocarditis, pneumonia, and eye problems. Patients with severe monkeypox may necessitate hospitalisation, supportive care, and antiviral treatments to reduce lesion severity and accelerate recovery. Possible consequences of monkeypox may include:

Deep scars on the face, arms, or legs. **a**

Vision loss. **b**

Other infections. **c**

Death, in rare cases. **d**

The type of monkeypox virus that broke out in 2022 (called Clade II) is rarely fatal[13].

Diagnosis:

Monkeypox can be difficult to diagnose because other diseases and disorders may present analogous symptoms. It is crucial to distinguish monkeypox from chickenpox, measles, bacterial dermatoses, scabies, herpes, syphilis, other sexually transmitted infections, and drug hypersensitivities. A person with monkeypox may simultaneously have other sexually transmitted infections, such as syphilis or herpes. A youth suspected of having monkeypox may also be afflicted with varicella. Thus, diagnostic testing is essential for facilitating prompt care, so averting serious disease and subsequent spread. [14]

The most effective laboratory test for monkeypox is RNA detection using polymerase chain reaction. Optimal diagnostic specimens are acquired directly from the

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rash—skin, fluid, or crusts—via a standardised swabbing technique. In the absence of skin lesions, diagnostic tests may be performed using swabs collected from the oral cavity, throat, anus, or rectum. Blood tests are inadvisable, and antibody detection methods may be unsuccessful as they do not distinguish between different strains of the smallpox virus. [14].

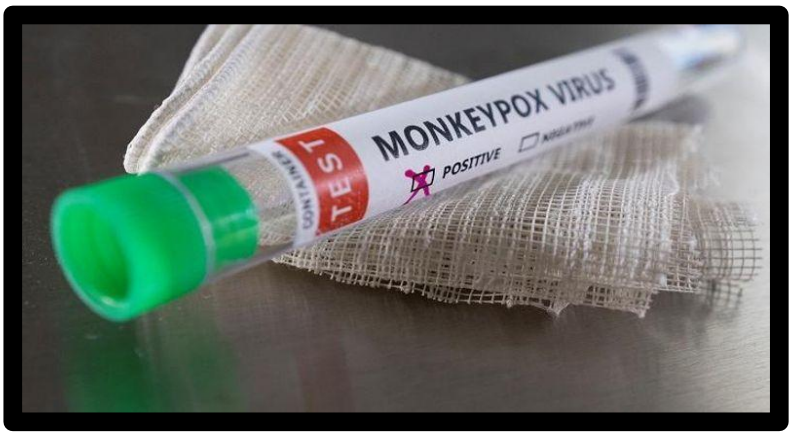

Image (5): Shows test samples taken from a person infected with monkeypox virus.

HIV testing should be available to monkeypox-infected adults and children as appropriate, and diagnostic testing for other conditions such as varicella zoster virus, syphilis, and herpes should be considered where possible[14].

Patients with a rash should be evaluated to rule out other associated conditions such as chickenpox, chickenpox, scabies, syphilis, skin allergies, and drug allergies. In addition, swollen lymph nodes are an indication that the patient may have monkeypox rather than smallpox or chickenpox. The doctor may also perform some laboratory tests and analyses to check the type of virus causing the disease, including: Polymerase Chain Reaction (PCR) and Enzyme-linked Immunosorbent Assay (ELISA) [15].

Monkeypox: Treatment of

Comprehensive research on smallpox treatments has led to the development of products that may be advantageous for the management of monkeypox. In January 2022, the European Medicines Agency approved the use of the antiviral medications Tecovirimat (TPOXX) and brincidofovir (Tembexa) for the treatment of monkeypox under extraordinary conditions. Experience with these medicines during a monkeypox outbreak is growing, however remains limited. Thus, their use is generally associated with participation in a clinical study or an expanded access protocol, which involves data collection to improve comprehension of their ideal future application. [15].

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New drugs used in the treatment:

Some smallpox vaccines may help prevent monkeypox, such as ACAM2000 and Genius. These vaccines can be used to prevent monkeypox because the virus that causes it is closely related to smallpox[14]. For people who are not expected to respond to smallpox vaccine, their doctor may offer immunoglobulin, which contains antibodies from people who have received smallpox vaccine. WHO currently recommends using either MVA-BN or LC16, or ACAM2000 when the other two vaccines are not available[14].

Image (6): Shows the monkeypox vaccine.

Period of communicability:

Most people infected with monkeypox suffer from a mild illness and recover within a few weeks. The period of onset of symptoms can be shortened to a few days or can begin to extend to (21) days[14].

Protection:

Vaccination should be limited to individuals at risk of infection, including close contacts of monkeypox patients and those in high-risk categories for monkeypox infection. Mass vaccination is still not advised, and travellers at risk may consider immunisation based on a personalised risk evaluation by their healthcare professional.

If you are at risk of monkeypox exposure owing to current outbreaks in your neighbourhood, see your healthcare professional regarding vaccine choices. The WHO presently advises that vaccines be administered to individuals who have had intimate contact with a monkeypox-infected person or to those belonging to a high-risk group for monkeypox infection. Vaccines are a component of our strategy to safeguard communities from monkeypox and should be utilised with other public health and social interventions.

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Monkeypox vaccines offer a degree of protection against infection and severe illness. Following immunisation, exercise caution to prevent contracting and transmitting monkeypox, as immunity takes several weeks to establish and a minority of individuals may not respond to the vaccine. The vaccine safeguards those who contract monkeypox post-vaccination from experiencing severe illness and requiring hospitalisation. [15]

Conclusion

Monkeypox is treated with some vaccines, the type and dose of which are determined by the doctor according to the person's age and condition, the severity of the infection, and the period of exposure to the infection. After receiving the vaccination, continue to be careful to avoid getting infected with monkeypox and transmitting it to others because developing immunity after vaccination takes several weeks and because a few people may not respond to the vaccination.

Recommendations

When symptoms appear on a person, he should be shown to a doctor immediately for diagnosis and not share injections and needles with others, not share clothes, sheets, or toothbrushes with anyone, inform the infected pregnant woman to the doctor about the fact that she is carrying the monkeypox virus, conduct the necessary tests during pregnancy, and finally, people who have been diagnosed with monkeypox can prevent the transmission of the infection from them to others.

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