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"Monkeypox Threatening in Jordan"

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Abstract:

The exceedingly uncommon zoonotic infectious illness monkeypox was reported as Jordan's first case on September 8, 2022, according to the Ministry of Health. Patients are regarded as contagious from the time the rash or prodrome appears until the lesions scab and the scabs come off. Monkeypox can also spread from one person to another through direct contact with infected animals and respiratory droplets. The lifestyle and culture of Jordanians facilitate the infection's rapid spread. Massive health education initiatives are thus needed to increase public awareness. To stop the transmission of the disease in places where monkeypox is endemic, one must restrict direct contact with blood and raw meat and stay away from rodents and primates.

Key words: Monkeypox, Smallpox, Antiviral, Epidemic.

1.Introduction

Public health experts are concerned that the development of a new epidemic brought on by the monkeypox virus might pose a new threat while the globe continues to be challenged by the coronavirus disease 2019 (COVID-19) pandemic (Yang, 2022; Risk et al., 2022). The genus orthopoxviruses, which also includes the variola, cowpox (CPX), and vaccinia viruses, includes the double-stranded DNA virus known as the monkeypox virus (Realegeno et al., 2017). The monkeypox virus was initially discovered in monkeys, but it also naturally infects rope squirrels, tree squirrels, Gambian pouched rats, and dormice (Risk et al., 2022).

Monkeypox is a zoonotic illness that is extremely uncommon. found in Sub-Saharan Africa and recognized to cause sickness that is clinically similar to other pox infections, including smallpox (Adebayo and Owoeye, 2017). Monkeypox was regarded for more than 50 years as an illness that was prevalent throughout Central and West Africa. Uncommon instances appeared outside of the continent among visitors from endemic regions, including extremely rare secondary transmission to medical professionals (Guarner, 2022).

Although the Monkeypox infection was indigenous to Africa before April 2022 and seldom ever spread outside of Africa (Shafaati and Zandi, 2022), the Health Ministry stated on Thursday- September 8, 2022- that Jordan has reported its first case of monkeypox. Hence this mini review aims to illustrate how this virus transmitted and how could we prevent it from being an outbreak in our kingdom.

2.Symptoms and Transmission

There are now two primary monkeypox viral clades known, with the former being linked to a more severe sickness in Central and West Africa (Durski et al., 2018). Smallpox-like signs and symptoms include a distinctive rash that is preceded by moderate prodromal symptoms (such as fever, lymphadenopathy, and symptoms like flu). Although they are less severe than smallpox (Risk et al., 2022), some cases in the present epidemic have been unusual, with the distinctive rash beginning in the vaginal and perianal regions and spreading to other parts of the body with or without it (Rao et al., 2022). Once the prodrome or rash appears, patients are regarded as contagious until the lesions scab and the scabs come off. The ideal method for determining if a person has active monkeypox is to look for viral DNA in swabs collected from the crusts of vesicles or ulcers (Durski et al., 2018).

Humans can only become infected through contact with infected animals. There is also no risk of infection spreading from one person to another without vaccination because the virus cannot survive in humans (Fine et al., 1988). However, a human-to-human transmission of monkey pox is now conceivable as a result of genetic alterations (gene loss). Due to the genetic polymorphism of the monkey pox virus, the virus may survive in humans and propagate between people (Kugelman et al.,2014). In accordance with research undertaken by the WHO in 1980, there was a 73% inter-human transmission of monkeypox, up from a 28% rate (Meyer et al.,2002).

According to Nolen et al. (2016), monkeypox is spread from person to person by respiratory droplets and direct contact with infected animals. Moreover, the virus can spread through sharing bedding and clothing, as well as direct contact with sores, scabs, or bodily fluids that are contagious (Risk et al., 2022). The habits and culture of Jordanian inhabitants make the spread of this infection much easier by encouraging sharing of meals on the same plate, clothing, and other private belongings among family and friends. Most people in Jordan reside in flats or residences with one or two bedrooms. Rich urban families typically live in detached homes or bigger flats. The majority of homes and buildings are built of concrete, although some

are also made of mud and stone. Plans for these structures allow for the addition of additional stories to offer flats for married sons. Farmers who travel and stay in tents made of their animals' skins and fur are in close proximity to them, which raises the danger of incidence.

3. Prevention

In order to prevent the transmission of monkeypox in locations where it is endemic, one must restrict direct contact with blood and undercooked meat while avoiding all interaction with rodents and primates. Massive health education efforts are required to raise public awareness, provide instructions on how to handle possible animal reservoir species (gloves, protective clothes, surgical mask), and warn people to stay away from afflicted people.

The prevention of human-to-human transmission in healthcare depends on infection control techniques. Improved isolation procedures and nursing techniques (gloves, protective clothes, surgical masks) call for training as well as sufficient resources in the form of staff and facilities.

Health professionals and anybody treating or coming in contact with patients who have monkeypox or their samples should be immunized against smallpox by national health authorities. According to estimates, receiving a smallpox immunization offers 85% cross protection against monkeypox (Fine et al., 1988). Smallpox vaccination was advised by the Centers for Disease Control and Prevention (CDC) within two weeks, preferable before four days of considerable unprotected contact to an infected animal or a confirmed human case (Petersen et al., 2019).

During an epidemic, the propagation of the monkeypox virus can be slowed down by isolating the affected animals and tracking down their contacts for at least six weeks after the last exposure. Specific guidelines issued by regional and international public health agencies must be followed. The main focus should be on raising awareness and taking appropriate action (decisions, medical personnel, sampling, surveillance, and education), both by local and international authorities.

Patients at hospitals should be placed right away in a negative air pressure isolation room, or a private room if those facilities are not available, if there is a suspicion that they have monkeypox (for example, a patient with fever, skin lesions, and a history of visiting an endemic area or contact with patients). Precautions should be made for droplets, contacts, and general hazards.

4.Treatment

Monkeypox does not have a particular therapy. The key recommendations continue to be supportive care, symptom control, and treatment of subsequent bacterial infections.

4.1. Suppliant Care

The majority of monkeypox patients heal without any medical assistance. To reduce gastrointestinal fluid loss in those who have digestive symptoms (such as vomiting and diarrhea), oral/intravenous rehydration is necessary (Reynolds et al., 2017).

4.2. Antivirals

Several antivirals have been licensed for the management of smallpox based on animal models, but they may also be effective in treating monkeypox infections. Human dose trials for these medications have been carried out, although their efficacy has not been fully defined (Adler et al., 2022).

4.2.1. Tecovirimat

The first antiviral approved for the treatment of smallpox in adults and children weighing at least 3 kg is tecovirimat (also known as TPOXX or ST-246), and it is regarded as the preferred method of care (Flick et al., 2020). Dual treatment with tecovirimat and brincidofovir may be utilized in individuals with advanced illness. By blocking the last steps in viral maturation and release from the infected cell, the viral envelope protein VP37—by which Tecovirimat functions—inhibits the transmission of the virus within an infected host (Russo et al., 2021). Although its effectiveness in treating monkeypox in people has not been investigated, investigations on animals treated with tecovirimat at various illness phases have shown better survival from deadly monkeypox virus infections in comparison to animals given with a placebo (Quenelle et al., 2007; Grosenbach et al., 2018).

The placebo side-effect profile was broadly identical to that of tecovirimat in an enlarged safety trial with 359 human volunteers given tecovirimat (Grosenbach et al., 2018). In short trials, tecovirimat and vaccinia immune globulin (VIG) were given to individuals who had smallpox vaccine-related side effects such eczema vaccinatum (CDC. 2007; Vora et al., 2008) and progressive vaccinia (Lederman et al., 2009). The CDC-approved Emergency Access Investigational New Protocol permits the use of tecovirimat for infections caused by orthopoxviruses other than Variola, such as monkeypox. For pediatric patients weighing less than 13 kg, the protocol also permits opening an oral capsule and combining its contents with liquid or soft food.

4.2.2. Brincidofovir and Cidofovir

brincidofovir has been authorized in the US for the treatment of smallpox, an oral counterpart of the injectable medicine cidofovir, brincidofovir, may offer a better safety profile than cidofovir, with reduced kidney damage (Chittick et al., 2017). These medications function by preventing viral DNA polymerase (Lanier et al., 2010). The effectiveness of brincidofovir against orthopoxvirus infections has been shown (Rice et al., 2011; Parker et al., 2012), despite the paucity of studies examining its usage in treating monkeypox infections in animal models. Although in vitro activity and effectiveness against deadly monkeypox virus infections in animals have been reported (Smee, 2008; Baker et al., 2003), clinical data on the effectiveness of cidofovir against monkeypox in people are still absent. It is necessary to provide cidofovir together with probenicid treatment and intravenous normal saline.

4.3. Vaccinia Immune Globulin (VIG)

A hyperimmune globulin called VIG has been approved by the FDA to treat a few vaccine-related side effects (Wittek, R. 2006). These include vaccinia-induced aberrant infections (apart from localized keratitis, such as ocular infections) and eczema vaccinatum, progressive vaccinia, severe generalized vaccinia, vaccinia infections in people with skin problems, and so forth (Wittek, R. 2006). Although a possible treatment, there is no information on how well VIG works against monkeypox and smallpox and using VIG for monkeypox or smallpox has not been studied in people. Patients with a history of exposure may instead get VIG since immunization with the vaccinia virus vaccine is contraindicated in those with severe immunodeficiency in T-cell function (Weinstein et al., 2005).

5. Conclusion

The spread of monkeypox across Jordan is a big concern and since this disease reached our land this indicates that it is no longer “a rare viral zoonotic disease that occurs primarily in remote parts of Central and West Africa, near tropical rainforests.”

The most advantageous strategy at present time is to stop the spread of monkeypox because its ecologic, zoonotic, epidemiologic, clinical, and public health components are still little understood.

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الملخص:

تم الإبلاغ عن أول حالة لمرض جدري القرود من قبل وزارة الصحة الاردنية في اليوم الثامن من شهر ايلول لعام 2022 ميلادية وهو مرض غير شائع من الأمراض الحيوانية المعدية. يعتبر المرضى معديين من وقت ظهور الطفح الجلدي أو البادرة حتى ظهور قشرة الآفات والقشور. يمكن أيضًا أن ينتقل جدري القرود من شخص إلى آخر من خلال الاتصال المباشر بالحيوانات المصابة ورذاذ الجهاز التنفسي. يسهل أسلوب حياة وثقافة الأردنيين انتشار العدوى بسرعة. وبالتالي ، هناك حاجة إلى مبادرات ضخمة للتثقيف الصحي لزيادة الوعي العام. لوقف انتقال المرض في الأماكن التي يتوطن فيها جدري القرود ، يجب على المرء تقييد الاتصال المباشر بالدم واللحوم النيئة والابتعاد عن القوارض والقرود.

الكلمات المفتاحية: جدري القرود, جدري الماء, مضاد فيروسي, وباء.