

Preventions and Treatments of Monkeypox

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Abstract

The research aims to reveal the importance of preventive medicine in identifying monkeypox, highlighting the reasons for the emergence and origin of the disease, and ways to prevent it. To achieve the objectives of the research, the descriptive analytical method was used, by studying the theoretical background that dealt with preventive medicine and monkeypox.

The research concluded To a set of results, the most important of which are:

1- Monkeypox is not far away, and is spreading rapidly. Therefore, it is necessary to prepare for any outbreak that may occur at any time through medical prevention and early detection of any outbreak of the disease.

2- There is no effective vaccine for monkeypox, and the available treatments are a group of painkillers and antibiotics.

3- Monkeypox is a contagious disease that is transmitted very quickly through direct contact between humans.

4- To prevent monkeypox, the medical prevention protocol must be applied at all levels.

In light of the previous results, the researcher recommends the following:

1-Working to educate people about the importance of medical prevention in limiting the spread of infections and epidemics.

2- Early preparation and detection of epidemics limits their spread and reduces the chances of infection among humans.

Keywords: *preventive medicine; Prevention of diseases and epidemics, monkeypox.*

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Introduction

Smallpox is an acute, highly contagious viral disease that is transmitted through breathing and touch. Its symptoms are a skin rash that results in the formation of permanent pits and scars, and sometimes causes loss of vision. (Zaki, 1989).

Monkeypox is an infectious disease. Therefore, much research focused on talking about the disease, its causes, risk factors for the disease, and ways to prevent it. The disease is called monkeypox because it was first discovered in the colonies of monkeys used in research in 1958 AD, and it was not discovered among humans until 1970 AD.(WHO.2022)

In early May 2022, a number of cases of monkeypox suddenly appeared in the United Kingdom, Spain and elsewhere in Europe, with the key observation being that the pattern of geographic spread was much more complex and broader than previous outbreaks of the same epidemic, which were largely localized and did not spread from country to country. They occur mostly in low-income communities. Within the first week of the WHO's initial report, 24 countries reported suspected and confirmed cases of monkeypox virus, some of which had known travel links to the United Kingdom, Spain, Canada, and Western Europe. As of June 5, 2022, there were 920 confirmed cases and 70 suspected cases, in more than 25 countries (Hamid, 2022).

Therefore, the current research attempts to shed light on the seriousness of monkeypox and the foundations of preventive medicine in preventing it.

Research problem:

The research problem can be formulated in an attempt to answer the following question: What are the components of preventive medicine in preventing monkeypox?

research importance:

The justifications for interest in the topic can be stated as follows:

1-The importance of the research stems from its topic, which deals with the role of preventive medicine in preventing diseases and epidemics.

2- The outbreak of monkey keloid disease in some countries, and its appearance from time to time, which means that the danger of the disease has not ended.

research aims:

The research aims to achieve a set of objectives:

1- Identify the foundations of preventive medicine and its levels.

2-Detecting the origins of monkeypox, its causes and treatment.

Search terms:

The concept of preventive medicine:

Preventive medicine is the science of preserving the individual and society by protecting them from diseases before they occur, and preventing the spread of infection if they occur (Al-Jarhi, 2017).

Monkeypox virus:

(MPXV) is a member of a subset of the Poxviridae family called Orthopoxvirus. This virus causes infection with clinical presentation resembling smallpox (SPX), which is caused by infection with the variola virus (VARV). MPXV was first isolated in 1958 from laboratory monkeys with a pox-like disease in a Copenhagen research facility in Denmark. [Ladnyj,1972; Foster, 1972].

Theoretical background:

The importance of preventive medicine:

The importance of preventive medicine lies as follows (Al-Hawli, 2007)

- 1 Protecting humans from diseases that are expected to occur from some incorrect practices.
- 2 Preserving the human element is the basis of progress and the source of prosperity and sustainable development.
- 3 Maintaining self-preservation is the most important goal of preventive medicine in all religions and civilizations.

Foundations of preventive medicine in Islam:

Islam was keen to pay attention to preventive medicine through the following (Al-Sayyad, 2017)

- 1 A person with a disability or infection should not be admitted to a sanatorium.
- 2 Stay away from countries where infections and diseases have spread.
- 3 Do not transfer food or pathogens from one place to another.
- 4 Establishing the jurisprudence of prevention in the Muslim culture, as it is his duty to preserve his health and life.
- 5 Self-control and nutritional control through diet is one of the most powerful means of treatment and prevention.

Levels of preventive medicine:

Prevention in medicine can be divided as follows (Al-Obaidan, 2016)

- 1 The first level of prevention: in which measures are taken to prevent the occurrence of the disease, such as: disposal of waste, provision of potable water, and vaccinations against infectious diseases.
- 2 The second level of prevention: in which work is done to limit the complication of the disease after it occurs, through early detection of the disease and rapid treatment, such as what happens in tuberculosis, cancer, and diabetes.
- 3 The third level of prevention: in which the social and psychological complications of the disease are reduced, the patient is rehabilitated to practice his normal life, and he is introduced to the side of adaptation to the disease if it is chronic.

Origins and nature of monkeypox:

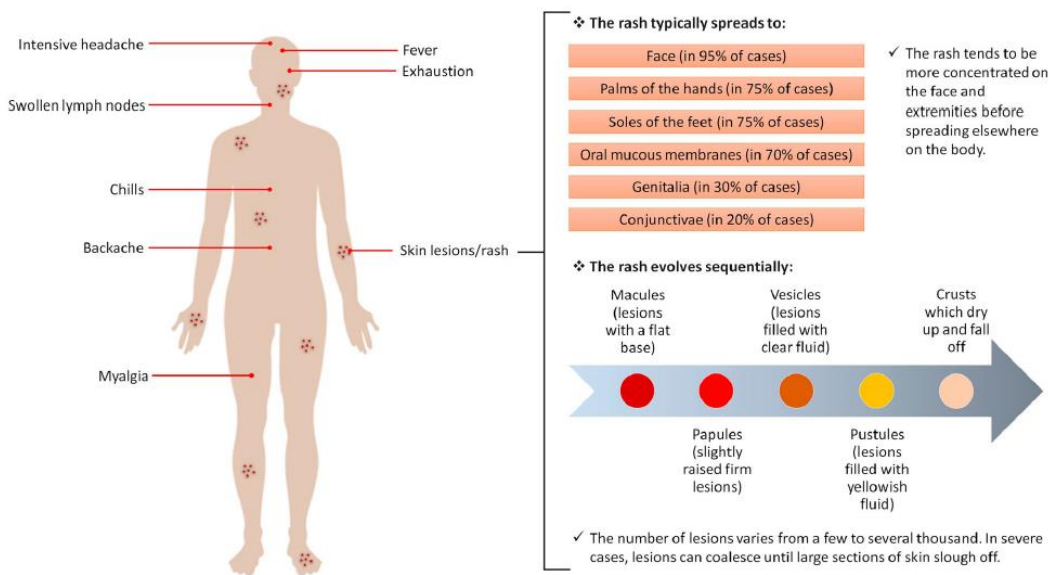
Monkeypox virus (MPXV) is a member of a subset of the Poxviridae family called Orthopoxvirus. This virus causes infection with clinical presentation resembling smallpox (SPX), which is caused by infection with the variola virus (VARV). MPXV was first isolated in 1958 from laboratory monkeys with a pox-like disease in a Copenhagen research facility in Denmark. Genomic studies have characterized MPXV into Central African/Congo Basin and West Africa clades with differential epidemiology and clinical manifestations. [Ladnyj,1972; Foster,1972].

Monkeypox is caused by an animal-sourced virus belonging to the genus of poxviruses, which infect humans with diseases such as “smallpox,” “cowpox,” “camelpox...etc. There are two distinct genetic subspecies of the monkeypox virus: the Central African (Congo Basin) subspecies and the West African subspecies, which are the usual places where this virus spreads. The Congo Basin subspecies causes more serious symptoms and is believed to be more

transmissible, and includes the animal hosts (in which the virus spreads). Before being transmitted to humans) a group of rodents and non-primates Humanity. (Hamid,2022)

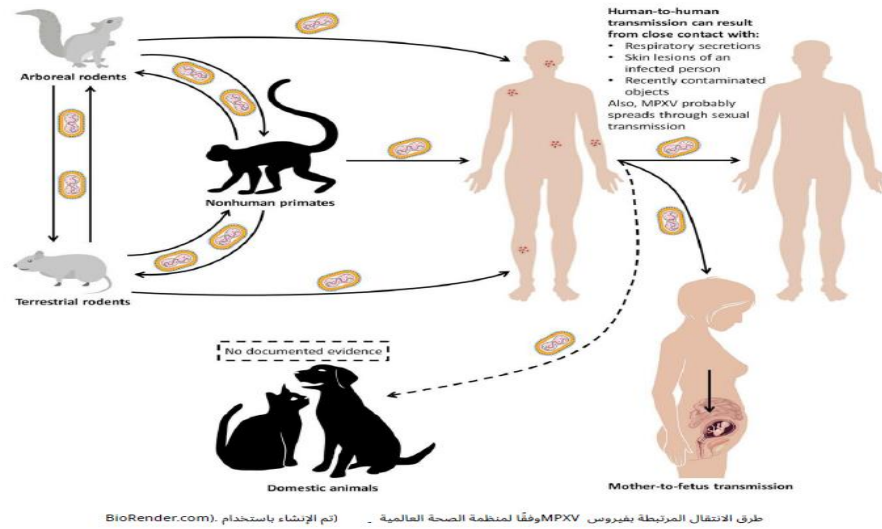
Clinical presentations

MPXV incubates for 10-14 days followed by an interval of 1-3 days, during which patients start to suffer from general signs and symptoms of viral infection and the SPX-like skin rash develops [Parker et al. 2007]. MPX disease begins as nonspecific symptoms such as backache, headache, chills, fever, fatigue, myalgia, lethargy and lymph node swelling. After three days, the fever decreases and the rash spreads centrifugally over the body (WHO,2022). Similarly to SPX rash, it first evolves as macules for 2-4 weeks, and then transforms into papules, vesicles, pustules and finally crusts and scabs. (Petersen et al,2019). These types of rash can be seen simultaneously during disease progression and last around two to four weeks. The numbers reach up to the thousands, with diameters of 0.5-1 cm and start from the trunk and then spread across the body with a centrifugal pattern of distribution. A centripetal pattern has been reported in a minority of patients. (Brown,& Leggat, 2016). Severe lymph node enlargement in the neck, axillary and groin regions are observed and can distinguish MPX from other infections. (Jezek et al. 1988). Onset of rash has been suggested to be the starting point of the infectious period, but the Centers for Disease Control and Prevention (CDC) have stated that



Methods of transmission of monkeypox:

The disease can be transmitted from animals to humans through direct contact with blood, body fluids, or skin or mucous lesions transmitted from infected animals, or by eating insufficiently cooked meat of infected animals, or from one person to another, through close contact with organ secretions. Respiratory (droplet) or skin lesions of an infected person Or objects recently contaminated by an infected person. (Hamid,2022)



Treatment of monkeypox:

The approach to the clinical management of monkeypox includes both general supportive care and use of antivirals with activity against the monkeypox virus. Approximately half of patients during the 2022 outbreak have required pain relief medications (eg, for oral or anogenital lesions). Additionally, for the treatment of proctitis, stool softeners and topical lidocaine have been used, and for the treatment of pruritus, warm baths and oral antihistamines could prove beneficial. Supportive care requiring catheterisation could be warranted for people who are dehydrated or are at risk for dehydration, people who require more intensive pain management, and people with severe disease or complications. In patients with extensive anogenital ulcers or abscesses, drainage, debridement, and wound management are required; antibiotics are prescribed for secondary bacterial infections. (Oriol, et al,20223)

Ways to prepare for a future epidemic:

It is important for countries to realize the seriousness of epidemics and diseases and that they do not come suddenly but rather through many causes, so they must be prepared for any future epidemic as follows (Hamid, 2022):

- 1- The presence of strong and flexible health systems, especially the primary care sector, to facilitate disease detection, provide basic care, and support the dissemination of vaccines.
- 2- The presence of surveillance systems and laboratory capabilities to detect outbreaks of human and animal diseases very quickly.
- 3-The need for cross-sector coordination mechanisms for prevention and preparedness in a close, strong and inclusive manner that includes all countries through joint cooperation.
- 4- Legislate legal frameworks and regulatory tools to support all forms of disease outbreaks and deploy countermeasures.
- 5-Work to develop plans to provide health and food supplies and basic equipment with a stock sufficient for any pandemic or disease.

Previous studies:

- 1- Hamid Study (2022); "Monkeypox are signs and signals of what is coming", There is a need

for well-functioning supply chains Good as well as adequate stocks of essential goods and equipment. Besides, regional and subregional institutions play key roles in areas such as regulatory coordination, reporting standards and information exchange on disease outbreaks, and key public engagement with health assets, such as high-complexity laboratories, where many countries, especially low- and middle-income countries, are struggling. Long-standing vulnerabilities in these preparedness areas, which translate into vulnerabilities at the international level as well. All of the above falls within the scope of increases in international funding to prepare to address perceived gaps on a global scale. This funding relates to research and development. Related to disease detection, treatments and vaccines.

2-Ma'mon M., et al, Study (2022)."Comprehensive literature review of monkeypox"; The current outbreak of monkeypox (MPX) infection has emerged as a global matter of concern in the last few months. MPX is a zoonosis caused by the MPX virus (MPXV), which is one of the Orthopoxvirus species. Thus, it is similar to smallpox caused by the variola virus, and smallpox vaccines and drugs have been shown to be protective against MPX. Although MPX is not a new disease and is rarely fatal, the current multi-country MPX outbreak is unusual because it is occurring in countries that are not endemic for MPXV. In this work, we reviewed the extensive literature available on MPXV to summarize the available data on the major biological, clinical and epidemiological aspects of the virus and the important scientific findings. This review may be helpful in raising awareness of MPXV transmission, symptoms and signs, prevention and protective measures. It may also be of interest as a basis for performance of studies to further understand MPXV, with the goal of combating the current outbreak and boosting healthcare services and hygiene practices.

3- Oriol. M. et al. Study (2023). Monkeypox Monkeypox is a zoonotic illness caused by the monkeypox virus, an Orthopoxvirus in the same genus as the variola, vaccinia, and cowpox viruses. Since the detection of the first human case in the Democratic Republic of the Congo in 1970, the disease has caused sporadic infections and outbreaks, mainly restricted to some countries in west and central Africa. In July, 2022, WHO declared monkeypox a Public Health Emergency of International Concern, on account of the unprecedented global spread of the disease outside previously endemic countries in Africa and the need for global solidarity to address this previously neglected disease. The 2022 outbreak has been primarily associated with close intimate contact (including sexual activity) and most cases have been diagnosed among men who have sex with men, who often present with novel epidemiological and clinical characteristics. In the 2022 outbreak, the incubation period ranges from 7 days to 10 days and most patients present with a systemic illness that includes fever and myalgia and a characteristic rash, with papules that evolve to vesicles, pustules, and crusts in the genital, anal, or oral regions and often involve the mucosa. Complications that require medical treatment (eg, antiviral therapy, antibacterials, and pain control) occur in up to 40% of patients and include rectal pain, odynophagia, penile oedema, and skin and anorectal abscesses.

Results:

By presenting the theoretical frameworks, a set of results can be derived as follows:

- 1- Monkeypox is not far away, and is spreading rapidly. Therefore, it is necessary to prepare for any outbreak that may occur at any time through medical prevention and early detection of any outbreak of the disease.
- 2- There is no effective vaccine for monkeypox, and the available treatments are a group of painkillers and antibiotics.
- 3- Monkeypox is a contagious disease that is transmitted very quickly through direct contact

between humans.

4- To prevent monkeypox, the medical prevention protocol must be applied at all levels.

Recommendations:

In light of the previous results, the researcher recommends the following:

1-Working to educate people about the importance of medical prevention in limiting the spread of infections and epidemics.

2- Early preparation and detection of epidemics limits their spread and reduces the chances of infection among humans.

3-The necessity of enacting legislation and laws that can confront any epidemic or pandemic at its beginning.

4- Working to provide a strategic stock of food, medical equipment, medicines and antibiotics that limit the spread of epidemics and diseases.

References

- Al-Hawli, M. (2007). Preventive Medicine in Islam, University of Gaza.
- Al-Jarhi, E. (2017). Infection and quarantine (preventive medicine) in light of the Sunnah of the Prophet, *Journal of Islamic Studies and Academic Research, Cairo University*, (84), 239-282.
- Al-Sayyad, A. (2017). Jurisprudential rulings related to preventive medicine between authenticity and modernity: a comparative medical jurisprudential study, *Yearbook of the College of Islamic and Arab Studies for Girls, Alexandria*, 5 (33), 553-645.
- Al-Obaidan, M. (2016). Preventive medical measures against epidemics, infectious and hereditary diseases: a legal jurisprudential study, (Master's thesis), University of Jordan.
- Brown K, Leggat PA (2016). Human monkeypox: current state of knowledge and implications for the future. *Trop Med Infect Dis.* 1(1):8
- Foster SO, Brink EW, Hutchins DL, et al(1972). Human monkeypox. *Bull World Health Organ.* 46 (5):569-576
- Hamed, S. (2022). Monkeypox: Signs and indications of what is coming, *Democracy Journal, Al-Ahram Foundation*, 22 (87), 264-267.
- Jezek Z, Szczeniowski M, Paluku KM, et al (1988). Human monkeypox: confusion with chickenpox. *Acta Trop.* 45(4):297-307.
- Ladnyj ID, Ziegler P, Kima E (1972). A human infection caused by monkeypox virus in Basankusu Territory, Democratic Republic of the Congo. *Bull World Health Organ.*;46(5):593-597.
- Oriol. M. et al. (2023). Monkeypox. www.thelancet.com Vol 401 January 7, 2023.
- Petersen E, Kantele A, Koopmans M, et al (2019). Human monkeypox: epidemiologic and clinical characteristics, diagnosis, and prevention. *Infect Dis Clin*;33(4):1027-1043.
- Ma'mon M., et al(2022). Comprehensive literature review of monkeypox. *EMI. Emerging Microbes & Infections.* Taylor & Francis, (11).2601-2630
- Zaki, M; et al (1089). *The objective dictionary of medical terms, their Latin and Greek sources and their explanation in Arabic and English*, Riyadh.
- WHO; 2022. Monkeypox: Available from: <https://www.who.int/news-room/fact-sheets/detail/monkeypox>