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Review Article

Monkey Pox: What We Need to Know

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Abstract

Monkey pox (MP) is a zoonotic orthopox viral infectious disease clinically resembling Small pox but with lesser mortality. First discovered in 1958 in monkeys, the first human infection was documented in 1970. Recently cases have been seen rising in west Europe and North America although in small numbers. India is yet to confirm any case of Monkey pox although many suspects are under surveillance. This review article provides a comprehensive update on how we should be prepared for this emerging viral infection.

Keywords: Monkey Pox; Zoonotic Disease; Ankara Vaccine

Abbreviations

CDC: Centre for Disease Control; PCR: Polymerase Chain Reaction; MP: Monkey Pox

Introduction

Monkey pox virus is a zoonotic orthopox virus which causes human infection similar to small pox however it has lower mortality and contagiousity as compared to small pox. It is endemic in western and central Africa with outbreaks in western hemisphere due to pet trade and international travel. It was first isolated in 1958 when monkeys shifted from Singapore to Denkmark developed illness [1].

The first confirmed case was isolated from child in the republic of Congo in 1970 [2]. Eradication of small pox and subsequent lack of vaccination provided gateway for monkey pox [3]. In addition there was a lot of under reporting because most cases occurred in rural Africa leading to patient underestimation infected with the virus [4].

Etiology

The virus belongs to family poxvirideae subfamily chordopoxvirinae genus Orthopox virus species Monkeypox virus. The virus measures 200-250 nm on electron microscopy and is brick shaped with dsDNA genome [5,7].

Epidemiology

This virus was first identified in captive monkeys with African rodents as natural reservoir. Infections have occurred in squerrals, rats, mice, monkeys, dogs and humans [4,8]. Two genetically dis-

tinct clads have been identified. First one is Congobasin (Central African clade) and second one is West African clade [4]. In 2003 Gambian rats imported from Ghana infected co inhabitant dogs in Midwest US leading to 53 human cases of Monkey Pox [9].

In may 2021 a family returned to UK from Nigeria and three members became infected with monkey pox virus [12]. As of may 2022 twenty cases of Monkey pox virus have been confirmed in England, Spain has reported 23 potential but unconfirmed cases and Purtegol has confirmed 5 out of its 20 suspected cases. In United States also one case has been confirmed [13,14].India is yet to confirm any case of monkey pox though some suspects are under surveillance.

Risk factors

Persons living in densely forested and rural areas of central and west Africa which prepare bush meat are prone to develop monkey pox [15]. In addition care givers for infected monkeys and lack of vaccination also predispose to infection. It is transmitted by contact with body fluids, skin lesions respiratory droplets of infected animals and directly or indirectly through contaminated fomites. Human to human transmission occurs due to lack of herd immunity. CDC recommends isolation of infected persons in negative pressure rooms in addition to standard droplet and air born precautions [17].

Pathogenesis

After inoculation the virus makes its entry into the lymph nodes followed by seeding of other organs leading to spectrum of symptoms in the form of fever, lymphnode enlargement followed by appearance of lesions which start in oropharynx and then involve skin including palms and soles.

Evaluation

Patient should be asked about history of recent travel, interaction with wild animals imported from endemic areas and providing care to infected animals. Clinical examination should focus on fever, headache, fatigue and lymphadenopathy. The lesions number from few to thousands and these evolve over a period of 2-4 weeks from macules to crusts [20]. presence of lymphadenopathy is a characteristic finding which differentiates it from small pox.

Diagnosis

The diagnosis is confirmed by isolation of viral DNA by PCR. Presence of lymphadenopathy is classical of monkey pox. So patients with such finding should be deemed appropriate for visualization of virus by PCR or electron microscopy. Other tests include immunohistochemical staining for viral antigen, IgM antibodies (acute infection) and IgG antibodies (past infection/vaccination) [19].

Treatment

Treatment is usually supportive. Infection can be prevented by isolating the patient, wearing of facemask and keeping the lesions covered until crust formation occurs and new skin layer is formed.

In severe cases antiviral agents like Brincidofovir, an oral DNA polymerase inhibitor is used. Another agent Tecovirimat, an intercellular viral release inhibitor is also used. Post exposure vaccination prophylaxis by giving Ankara vaccine is recommended. If vaccine is given within 4 days of exposure disease onset can be prevented and if given within 14 days disease severity can be reduced [16,21].

Prognosis

West African clade has favorable prognosis with a case fatality rate of <1% while as central basin clade is relatively lethal with a case fatality rate of around 11%.Clinical recovery occurs fully within 4 weeks of disease onset and some patients are left with permanent scaring of the lesions [4].

Complications

The complications include bacterial super-infection, permanent skin scaring hyperpigmentation/hypopigmentation, corneal scaring, pneumonia, sepsis, encephalitis and death.

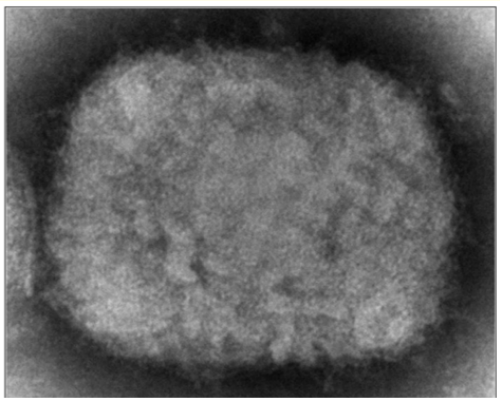

Figure 1: Poxvirus under electron microscopy.

Figure 2: Monkeypox lesions on palms.

Figure 3: Maculopapular lesions over forearm.

Figure 4: Monkeypox lesions on hands.

Conclusion

Education of patients and healthcare workers is of significant importance in endemic regions of world. Historically monkey pox virus has limited ability for human to human spread. However due to waning population of people vaccinated against small pox provides a gateway for insurgence of human monkey pox. The small pox vaccine has an efficacy of 85% in preventing monkey pox which provides a ray of hope in controlling the infection in case the need arises.

Source of Funding

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Conflict of Interest

Nil.

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Dedicated to all Health care workers.

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