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Editorial

The Continuing Evolution of Viruses: A Never Ending Saga

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As the world starts getting out of grip of deadly COVID-19 pandemic, there's another kid on the block. This time it's monkeypox a not so new virus but with unusual unprecedented appearance in non-endemic countries with globally tally of monkeypox cases more than 800 and continues to increase daily across more than two dozen countries. So is it time to worry again or the COVID has made us strong and prepared to face any other virus. More clearly, it is not COVID and people are not away from another lockdowns to stop the spread of monkeypox virus.[1] On the other hand, it is a rare and unexpected monkeypox outbreak which has taken scientists and infectious diseases specialists around the globe by complete surprise.[1]

Monkeypox is a viral illness was first discovered in 1958 when two outbreaks of a pox-like disease occurred in colonies of monkeys in research facility ,so the name “monkeypox” comes from this event. Till 1970 there was no case reported of monkeybox in humans.The first human case of monkeypox was recorded in the Democratic Republic of the Congo (DRC) in 1970 and later it became endemic in parts of Central and West Africa. Monkeypox endemic countries are Cameroon, Benine, The Republic of Central Africa, The Congo Democratic Republic, Ghana, Gabon, Liberia, Ivory, Nigeria, South Sudan and Sierra Leone.[2] The virus was limited to region only till 2003, when we found the first monkeypox outbreak outside of African the United States of America with over 70 cases and was linked to contact with infected pet dogs. Monkeypox has also been reported in travelers from African countries in the form of sporadic cases in UK ,Israel ,Singapore and US between 2018 and 2022.[2]

In May 2022, a cluster of cases of monkeypox was reported in the United Kingdom and these cases had no history of travel or contact with a traveler. Since the UK reporting of cases, several other countries have reported cases of monkeypox. Uptill 6th June 2022 more than 800 cases from 25 different countries have been confirmed.

Monkeypox virus is characterized to have double-standard DNA, belongs to genus Orthopox virus of the Poxiviridae family.[2] Currently, two phylogenetically distinct clades have been identified, the Central African (Congo Basin) clade and the West African clade. The Central African clade is reported more frequently and more severely than the West African clade .The case fatality ratio for the West African clade has been documented to be around 1-3%, whereas for the Central African clade, it may be as high as 10%.All infections characterized so far among the recent clusters have been due to the West African clade.[3]

Monkeypox can infect various animal species but the natural host is unknown. This includes rope squirrels, tree squirrels, Gambian pouched rats, sooty manga bey, and other species. Monkeypox spreads when someone comes into close contact with another person, animal or material infected to have virus. Broken skin is required to enter the virus in the body while other routes include, contact with mucus membrane or through respiratory tract, mouth, nose and eyes. Respiratory droplets are the most common human to human route of transmission though needed face to face contact for a longer time. There have been cases of sexual route of transmission and fetal transmission from mother to child is also a possibility.[3]

Symptoms include fever, myalgia, intense headache and severe asthenia. There is a characteristic rash

which starts as mucosal lesions in oral cavity and tongue which persist for 1-2 days before the generalized skin rash develops. Exanthem starts from face in majority of cases and then spreads centrifugally to limbs, palms and soles. The lesions develop synchronously and not as crops. They are 2-10 mm firm deep-seated lesions. The rash affects the face in 95% of cases and palms and soles in 75% of cases. Oral mucosa is involved in 70% cases, genitalia 30%, conjunctiva and cornea 20%. The exanthema has different stages, starting as macular lesions having flat base trailing to papules characterized by firm raised lesions, vesicles described as clear fluid filled lesions and Pustules (lesions filled with yellowish fluid) all lasting for 1-2 days. These lesions then have Crust formation that eventually falls off making patients noninfectious. Patients typically have lymphadenopathy that helps it differentiates from other viral fevers associated with rash.[4]

Currently specific treatment of Monkeypox infection is not available, but Monkeypox out breaks can be controlled by using smallpox vaccines ,cidofovir, vaccinia immune globulin (VIG) and ST-246 (TPOXX). At present clinical care for Monkey pox virus disease is mainly absorbed to diminish the symptoms, address the complications and avert long term effects. Patients must be given food and fluids to uphold enough nutritional eminence. In case of secondary bacterial infections antibiotics are recommended. Antiviral agent known as tecovirimat (TPOXX) which was introduced for smallpox and accredited by European Medicines Agency (EMA) and FDA against Monkeypox recently during 2022 grounded on data among human and animal researches. It is not extensively available yet. Tecovirimat is a VP37 envelope wrapping protein inhibitor prevents assembly of extracellular viruses, accountable for spread of systemic infections, preventing cytopathic effects induced by virus. It is available in both oral and injectable forms. Clinical features and management of human Monkeypox : a retrospective (2018-2021) observational study in the UK published on 24th may 2022 showed that tecovirimat being used to treat patients presenting symptoms for short duration and shedding of virus by upper respiratory tract compared to other patients with same disease, presenting no adverse proceedings recognized afore discharge. Brincidofovir and Cidofovir are two other antiviral drugs which have demonstrated efficacy against poxviruses in animal and in-vitro studies. Though the data lacks to present the efficacy of these drugs for the treatment of Monkeypox among human.

As smallpox and Monkeypox viruses are closely associated to each other, therefore, Monkeypox could be prevented by using smallpox vaccination. Data in the past from Africa proposes the 85% efficacy smallpox vaccine in prevention from. Monkeypox. ACAM2000 and lmvamune or Imvanex (also named as Jynneos[tm]) are a couple of recently accredited vaccines in US to inhibit smallpox. Specialists also have faith in vaccination following exposure to Monkeypox can help to control the severity of disease. Currently vaccination is only recommended for clinical laboratory personnel performing diagnostic tests for orthopox viruses such as smallpox and Monkeypox, laboratory people doing research on the viruses and healthcare workers who administer the ACAM2000 vaccine (live virus vaccine) or care for patients infected with ortho poxviruses. Currently this vaccine is also being recommended for Monkeypox infection.[5]

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