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EDITORIAL

Obstetric Care for Monkey Pox in India: What Every Clinician Should Know

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Abstract

Monkeypox is a contagious viral disease that spreads between animals and people. The UK government guidance described the first case of 'Monkey Pox' in 1958, when it was found only in monkeys used for research purposes. Fortunately, for a third world fast developing country like India, monkeypox does not spread easily in the population but spread by close physical contact between people, and there is limited information available about the impact on pregnancy. The virus can enter the body through broken skin, the respiratory tract, or mucous membranes (the moist inner lining of cavities and some organs in the body). The signs and symptoms of monkeypox virus infection in people who are pregnant appear similar to those in nonpregnant people. The symptoms include fever, lymphadenopathy, lethargy, pharyngitis, headache, myalgias, and rash. Rash associated with monkeypox virus infection can be found in the anogenital area (most commonly reported location in this current outbreak), trunk, arms, legs, face, and the palms and soles. The diagnostic approach to a patient with suspected monkeypox virus infection is the same for pregnant and nonpregnant people. If a patient is present with signs and symptoms of monkeypox virus infection, diagnostic testing should be considered, especially if the person has risk factors for monkeypox virus infection. There are limited data on monkeypox infection during pregnancy. It is unknown whether pregnant people are more susceptible to monkeypox virus or whether infection is more severe in pregnancy. Monkeypox virus can be transmitted to the fetus during pregnancy or to the newborn by close contact during and after birth. Adverse pregnancy outcomes, including spontaneous pregnancy loss and stillbirth, have been reported in cases of confirmed monkeypox infection during pregnancy. Preterm delivery and neonatal monkeypox infection have also been reported. Monkeypox virus can be transmitted to the fetus during pregnancy or to the newborn by close contact during and after birth. Adverse pregnancy outcomes, including spontaneous pregnancy loss and stillbirth, have been reported in cases of confirmed monkeypox infection during pregnancy. Infection control practices for the care of patients who are pregnant with monkeypox infection are the same as those for patients who are not pregnant with monkeypox infection. This includes appropriate isolation of patients with monkeypox; training for health-care personnel on maternity and newborn care units on correct adherence to infection control practices and personal protective equipment (PPE) use and handling; and ensuring sufficient and appropriate PPE supplies are positioned at all points of care. Furthermore, visitors to pregnant or postpartum patients with monkeypox should be strictly limited to those essential for the patient's care and well-being, and should have no direct contact with the patient. Use of alternative mechanisms for patient and visitor interactions, such as video-call applications, should be encouraged for any additional support. CDC also recommends pregnant, postnatal, and breastfeeding women should be prioritized for medical treatment as there is a significant risk to the baby. They also identify these groups as eligible for treatment.

Monkeypox is a contagious viral disease that spread between animals and people. The UK government guidance described the first case of 'Monkey Pox' in 1958, when it was found only in monkeys used for research purposes [1].

In 1970, it was first reported to have jumped to human populations in Democratic Republic of the Congo, Africa. The disease is now endemic in some African countries including Nigeria, Liberia, Sierra Leone and the Democratic Republic of the Congo [1].

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Fortunately for a third world fast developing country like India, monkeypox does not spread easily in the population but spread by close physical contact between people and there is limited information available about the impact on pregnancy. The virus can enter the body through broken skin, the respiratory tract or mucous membranes (the moist inner lining of cavities and some organs in the body). The signs and symptoms of monkeypox virus infection in people who are pregnant appear similar to those in nonpregnant people. The symptoms include fever, lymphadenopathy, lethargy, pharyngitis, headache, myalgias, and rash. Rash associated with monkeypox virus infection can be found in the anogenital area (most commonly reported location in this current outbreak), trunk, arms, legs, face, and the palms and soles. A wide spectrum of skin lesions has been described, including macular, pustular, vesicular, and crusted lesions, and lesions in multiple phases were present simultaneously [2].

Rash in a person who is pregnant with risk factors for monkeypox virus infection needs to be differentiated from other skin conditions during pregnancy. Importantly, monkeypox lesions can mimic those of other skin infections, such as molluscum contagiosum; and during the current outbreak, lesions have been common in the genital region. Therefore, monkeypox should be a differential diagnosis for any patient presenting with a rash or genital lesion. Patients with rashes initially considered characteristic of more common infections (e.g., varicella zoster or sexually transmitted infections [STIs]) should be carefully evaluated for a monkeypox rash [2].

The diagnostic approach to a patient with suspected monkeypox virus infection is the same for pregnant and nonpregnant people. If a patient presents with signs and symptoms of monkeypox virus infection, diagnostic testing should be considered, especially if the person has risk factors for monkeypox virus infection. CDC outlines epidemiological criteria for a suspected case of monkeypox. Co-infection with monkeypox virus and other STIs has been frequently reported (NEJM 2022). The presence of an STI does not rule out monkeypox, and clinicians should have monkeypox on their differential diagnosis when presented with an STI-associated or STI-like rash, even if it is localized and not (yet) diffuse [2].

There are limited data on monkeypox infection during pregnancy. It is unknown whether pregnant people are more susceptible to monkeypox virus or whether infection is more severe in pregnancy. Monkeypox virus can be transmitted to the fetus during pregnancy or to the newborn by close contact during and after birth. Adverse pregnancy outcomes, including spontaneous pregnancy loss and stillbirth, have been reported in cases of confirmed monkeypox infection during pregnancy. Preterm delivery and neonatal monkeypox infection have also been reported. The risk factors associated with severe infection and adverse pregnancy outcomes are not known [2].

Monkeypox virus can be transmitted to the fetus during pregnancy or to the newborn by close contact during and after birth. Adverse pregnancy outcomes, including spontaneous pregnancy loss and stillbirth, have been reported in cases of confirmed monkeypox infection during pregnancy. Preterm delivery and neonatal monkeypox infection have also been reported. The frequency and risk factors for severity and adverse pregnancy outcomes are not known [2].

Infection control practices for the care of patients who are pregnant with monkeypox infection are the same as those for patients who are not pregnant with monkeypox infection. This includes appropriate isolation of patients with monkeypox; training for health care personnel on maternity and newborn care units on correct adherence to infection control practices and personal protective equipment (PPE) use and handling; and ensuring sufficient and appropriate PPE supplies are positioned at all points of care.

Furthermore, visitors to pregnant or postpartum patients with monkeypox should be strictly limited to those essential for the patient's care and well-being, and should have no direct contact with the patient. Use of alternative mechanisms for patient and visitor interactions, such as video-call applications, should be encouraged for any additional support.

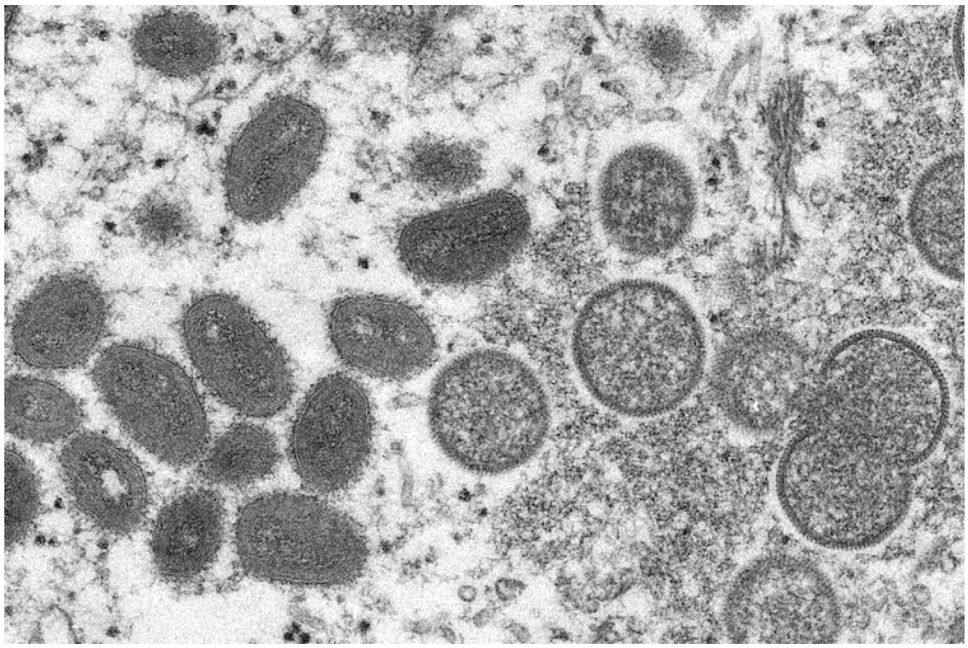
CDC also recommends pregnant, postnatal and breastfeeding women should be prioritized for medical treatment as there is a significant risk to the baby [3]. They also identify these groups as eligible for treatment and encourage health care providers to consult infectious disease specialists.

The European Center for Disease Prevention and Control has said most people (who are not pregnant) have mild disease with recovery within a few weeks, but the Nigerian cases have had a fatality rate of roughly 3%. Mortality is likely higher in vulnerable groups such as newborn babies and pregnant or breastfeeding women [3].

A recent paper published The Lancet provides guidelines for doctors and midwives on the management of monkeypox infection during pregnancy. These guidelines include increased fetal monitoring and increased surveillance of the mother in hospital isolation rooms if necessary, depending on her symptoms [3].

If the woman has genital lesions at the time of birth, she may be offered a caesarean. The newborn baby will need careful monitoring and precautions to reduce the risk of transmission from the mother. Consultation with a specialist infectious diseases pediatrician is recommended in these cases [3].

The CDC outlines infection control recommendations for the prevention of monkeypox virus infection in health care settings. Standard precautions should be applied for all patient care, including for patients with suspected



Under the microscope, you can see mature, oval-shaped monkeypox virions, left, and spherical immature virions, right. Cynthia S. Goldsmith, Russell Regner/CDC

monkeypox. If a patient seeking care is suspected to have monkeypox, infection prevention and control personnel should be notified immediately [3].

Clinicians should don appropriate PPE prior to evaluation of a suspicious rash, which includes gown, gloves, eye shields, and a NIOSH-approved particulate respirator with N95 filters or higher [4].

There are currently two available vaccines that have demonstrated efficacy against monkeypox virus infection: JYNNEOS and ACAM2000.

The Advisory Committee on Immunization Practices (ACIP) recommends that people whose jobs may expose them to orthopoxviruses, such as monkeypox, get vaccinated with either ACAM2000 or JYNNEOS to protect them if they are exposed to an orthopoxvirus. For the current outbreak, individuals, including people who are pregnant, who are exposed to monkeypox can be vaccinated. Postexposure vaccination is recommended within 4 days from the date of exposure for the best chance to prevent onset of the disease [4].

Pregnant, recently pregnant, and breastfeeding people should be prioritized for medical treatment if needed. Pregnancy alone is an indication for offering treatment in patients with monkeypox virus infection. Treatment for monkeypox virus should be offered to people who are pregnant, recently pregnant, or breastfeeding; however, given the limited data on treatment efficacy, treatment decisions will depend on the stage and severity of illness. Close monitoring for severe disease and pregnancy complications are important. The risks and benefits of treatment should be discussed with the patient using shared decision-making, and the decision to treat and monitor a pregnant person as an outpatient or inpatient should be individualized [4]. The safety profile of this medication in pregnancy is unknown, but it is thought to be able to be used following a risk and benefit analysis by the medical practitioner. Women should not seek vaccination without risk factors being present.

There are several treatment options available for monkeypox. The CDC is offering assistance to physicians in the diagnosis and management of patients with suspected monkeypox.

Tecovirimat—the first-line antiviral for people who are pregnant, recently pregnant, or breastfeeding. There are no human data on the use of tecovirimat in pregnancy and lactation, and information of its impact on reproductive development is limited to animal studies. No specific fetal effects were observed in these studies. It is not known whether treatment with tecovirimat during pregnancy prevents congenital monkeypox. Tecovirimat was present in breast milk in animal studies, and it is not known whether levels of tecovirimat expressed in breast milk are sufficient for treatment of a breastfeeding child with monkeypox. As such, if indicated, children with monkeypox who are breastfeeding should be treated independently [5].

Cidofovir and Brincidofovir—alternative antiviral therapies to treat monkeypox infection for the general population, animal reproduction studies showed evidence of teratogenicity. As such, these medications should not be used to treat monkeypox virus infection in people who are in the first trimester of pregnancy. Similarly, it is not known whether cidofovir and brincidofovir are present in breast milk, and they should not be used in people who are breastfeeding because of the potential for serious adverse reactions in the

breastfeeding infant [5]. An important side effect to be aware of with the use of cidofovir is nephrotoxicity.

Vaccinia Immune Globulin Intravenous (VIGIV)—Animal reproduction studies have not been conducted with VIGIV; therefore, it is not known whether VIGIV can cause fetal harm when administered during pregnancy. However, immune globulins have been widely used during pregnancy for many years without any apparent negative reproductive effects. The risks and benefits of VIGIV administration should be assessed for each individual patient. It is not known whether VIGIV is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when VIGIV is administered to a person who is breastfeeding [5].

Because of the limited data on monkeypox virus and pregnancy, the exact risk to the fetus, when vertical transmission is most likely to occur, and what additional fetal surveillance may be needed are unclear. Additional fetal surveillance may be considered depending upon the gestational age, but data regarding fetal surveillance are extrapolated from other viral infections that have been monitored during pregnancy. Specific evidence-based fetal interventions for monkeypox are unknown at this time. Recommendations regarding the need for additional antenatal fetal surveillance may evolve as more information becomes available if additional monkeypox cases during pregnancy are reported during this outbreak [5].

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