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Interim Clinical Considerations for Management of Ocular Mpox Virus Infection

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Who this is for: Healthcare professionals providing care for people with mpox virus infection.

What this is for: Interim considerations for the care of people with mpox virus infection involving the eye(s), including considerations for symptomatic management.

How to use: This information is intended as an aid for healthcare facilities and healthcare professionals developing plans for mpox virus infection treatment.

Key Points

- Mpox virus infection can affect vulnerable anatomic sites, including the eyes, which may require specific therapeutic management and considerations.
- Involvement of the eyes can be a vision-threatening condition and should be treated urgently.
- There are very few data on the effectiveness of currently available therapeutics and on the outcomes of ocular mpox virus This guidance will be updated as new data become available.

Ocular Manifestations of Mpox Virus Infection

Ocular involvement is a potentially debilitating manifestation for people experiencing mpox virus infection.[1] Mpox virus may enter the eye via autoinoculation[2] and cause a range of problems from mild to severe, including conjunctivitis, blepharitis, keratitis, corneal ulcer, corneal scarring, and rarely loss of vision.[3] In a 2014 study in the Democratic Republic of the Congo, 23% of patients with confirmed mpox virus infection had conjunctivitis.[1] The majority (62%) of these patients were young children (<10 years of age), and patients with conjunctivitis were more likely to be “bed-ridden”, suggestive of more severe disease.[1]

In the current ongoing mpox virus outbreak, ocular involvement has been uncommon with retrospective evidence reporting that less than 1% of individuals had eye involvement.[4] Differences are likely mpox virus< clade-related, but are also potentially related to the mode of transmission, as the epidemiology and risk factors associated with the current outbreak are different from previous outbreaks.[5] As data emerge related to the spectrum of phenotypes of disease caused by the current viral clade, additional information on the true rate of ocular involvement may become available.

Complications of Ocular Mpox Virus Infection

Corneal scarring and vision loss are potential severe consequences of ocular involvement of mpox virus infection.[3] Bacterial superinfection of corneal ulcerations can cause severe complications. Recent reports have documented periobital and facial lesions with RT-PCR evidence of mpox virus in association with corneal and conjunctival findings. The constellation of facial and ocular symptoms was observed in association with systemic symptoms (e.g., fever, painful cervical adenopathy) and risk factors for sexual transmission.[6,7]

Evaluation of Suspected Ocular Mpox Virus Infection

If ocular involvement of mpox virus is suspected, then ophthalmologic consultation should be strongly considered for a thorough evaluation and continued monitoring of the patient's condition and extent of disease, especially in cases of vision changes, eye pain, or increasing redness.

Acute mpox virus infection can currently be diagnosed by 2-stage RT-PCR testing, first for non-variola orthopox virus (OPX) followed by mpox virus.[8] Swabs of lesions on the conjunctiva are acceptable specimens for RT-PCR testing to confirm the presence of mpox virus in a patient with conjunctival involvement. Clinical judgement should be used in assessing the stability of underlying eye structures, and caution should be taken with obtaining swabs if corneal ulcers or severely painful lesions are present.

Slit lamp examination and dilated funduscopic examination can be helpful for determining whether anterior segment structures (conjunctiva, cornea, iris) or posterior segment structures (retina, nerve, choroid) are involved. Infection prevention and control precautions and equipment disinfection protocols are recommended when examining patients at the slit lamp biomicroscope.

A patient with suspected or confirmed mpox virus infection should be placed in a single-person room with the door closed. If the patient is transported outside of their room, they should use well-fitting source control (e.g., medical mask) and have any exposed skin lesions covered with a bandage, sheet or gown. PPE used by healthcare personnel who enter the patient's room or perform any eye examination should include gown, gloves, eye protection (i.e., goggles or a face shield that covers the front and sides of the face), and a NIOSH-approved particulate respirator equipped with N95 filters or higher. For infection prevention and control measures to take when evaluating a person suspected of having mpox, see: Infection Prevention and Control of Mpox in Healthcare Settings.

Treatment Options – Systemic Therapy

Systemic antiviral therapy should be considered for all patients with severe mpox virus disease, which includes ocular manifestations of mpox.

Tecovirimat (TPOXX) [9] is often given for systemic therapy. If there is concern for the patient's gastrointestinal absorption or ability to consume a high-fat meal[10] (600 calories and 25gm fat) with their doses of tecovirimat to support absorption, intravenous (IV) tecovirimat can be considered. See Guidance for Tecovirimat Use Under Expanded Access Investigational New Drug Protocol during 2022 U.S. Mpox Outbreak . There are currently no pharmacokinetic data on the levels of tecovirimat penetration on the surface or in the deeper structures of the eye.

Ocular vaccinia, also caused by an orthopoxvirus, has features similar to those of ocular mpox. A single study in a rabbit model showed potential for corneal scarring when vaccinia keratitis was treated with vaccinia immune globulin intravenous (VIGIV) [11], while a second study in a rabbit model showed no increased corneal scarring [12]. There are limited human data to base any decision on use of VIGIV in cases of ocular mpox virus, especially in cases of keratitis. VIGIV may therefore be considered on a case-by-case basis in consultation with infectious disease specialists and CDC subject matter experts.

Assessment of the ocular structures involved (e.g., cornea, conjunctiva, intraocular involvement) and assessment for other co-infections in consultation with ophthalmologists and the multi-disciplinary team may also be helpful to assess the benefit-risk considerations related to use of antiviral therapies.

Treatment Options – Topical Therapy

Trifluridine may be considered in cases of mpox virus conjunctivitis and is recommended in cases of mpox virus keratitis, in consultation with an ophthalmologist. Trifluridine is a topical antiviral used for management of herpes-simplex keratitis and is the preferred treatment for ocular orthopox virus infection with vaccinia as a complication of autoinoculation (i.e., transferring virus from a lesion to another site on the body) after smallpox vaccination with ACAM 2000.[13] Importantly, prior evidence from cowpox virus infection of the eye suggests that topical steroids should be avoided to prevent viral persistence and corneal damage.

Additionally, in patients with corneal disease, including corneal ulcer, consider topical lubricants and/or antibiotics to prevent bacterial superinfection, which can be a vision-threatening complication of corneal ulcer.[3]

Preventive Measures

To reduce risk for autoinoculation of the eye, frequent handwashing and avoidance of eye rubbing should be discussed with patients who have mpox.

Prophylactic treatment with topical trifluridine could be considered for patients with lesions on their eyelids, near the eye, or for children under the age of 8 and others unable to follow instructions about hand hygiene and avoidance of hand-eye contact. This decision should be made in consultation with an ophthalmologist or specialist in infectious diseases, particularly as prolonged use of trifluridine eye drops can result in corneal epithelial toxicity.[14]

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