What Otolaryngologists Should Know About Mpox: A Scoping Review

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ABSTRACT

The 2022 mpox outbreak is notable for its volume, spread to new geographic regions, and atypical clinical presentations. Reported otolaryngologic manifestations of mpox infection in this and prior outbreaks include head and neck skin lesions, cervical lymphadenopathy, oral lesions, oropharyngeal lesions, laryngeal lesions, throat pain, cough, dyspnea, dysphagia/odynophagia, nasal congestion, and rarely otalgia. As the spread, manifestations, and management of mpox evolve, it is important that providers stay apprised of updates and include mpox infection as a differential diagnosis of new facial and oral lesions.

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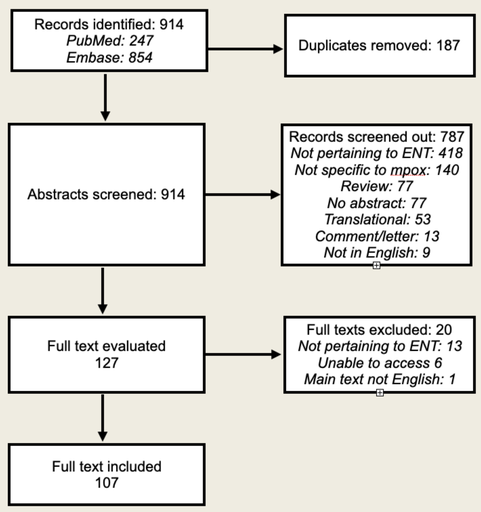
Introduction

- Over three decades, the global burden of mpox has increased, with growing incidence in endemic countries and more frequent outbreaks in non-endemic countries.[1-12] The drivers of this trend are multifactorial, including the decreasing herd immunity to orthopoxviruses since the cessation of regular smallpox vaccination in the 1980s.[13-14]
- The 2022 mpox outbreak was notable for its high case volume, multi-centered distribution across endemic and non-endemic countries, and atypical clinical presentations.[15,16]
- As many of our patients' main points of contact in the healthcare system, otolaryngologists should have an understanding not only of the otolaryngologic implications of mpox, but also of the overall presentation, work up, and management of this viral infection. Additionally, to ensure the safety of patients and colleagues, awareness of occupational health risks and recommendations is key.
- We provide 1) an overview of mpox, 2) information about the 2022 outbreak, 3) an analysis of otolaryngologic manifestations reported in the literature, and 4) occupational health considerations.

Methods

- We conducted a literature review of English language articles using combinations of the search terms ("monkeypox" OR "monkey pox" OR "mpox") and otolaryngology-related terms on Pubmed Central and Embase.
- Studies were then screened based on abstract review, followed by a review of full manuscripts.
- Exclusion criteria:
  - Not pertaining to otolaryngology
  - Not specific to mpox
  - Reviews
  - Translational or basic science
  - Comment, letter, or opinion
  - Not in English
- Included texts pertain to background, otolaryngologic symptoms, occupational health considerations.



Background on mpox

- Double stranded DNA virus in the orthopoxvirus genus in the poxviridae family, along with variola virus (smallpox), cowpox virus, and vaccinia virus (virus used in smallpox vaccines).[14,17]
- First identified in monkeys in 1958. Other natural hosts include rope and tree squirrels, Gambian poached rats, and dormice.
- First human case in 1970 in the Democratic Republic of Congo (DRC).
- Two clades[18]
  - Clade I: Endemic to the Congo Basin or central Africa. More severe disease, case fatality rate (CFR) approximately 10%
  - Clade II: Endemic to west Africa. CFR <1% to 3.6%.[19–21]
    - Clade II is divided into Clade IIa and IIb, the latter of which is responsible for the 2022 outbreak.[22]
- The global burden of monkeypox has increased over decades. In endemic DRC, the incidence has increased 20-fold since the late 1980s.[1–5] Cases in non-endemic countries have also been reported more frequently.
- The first non-endemic cases were in the US in 2003 (n=47), traced to transmission from pet prairie dogs that had been infected by a shipment of small animals from Ghana.[9,23] Since then, small outbreaks (n=1 to 3) in non-endemic countries have occurred in the UK (2018, 2019, 2021), Israel (2018), Singapore (2019) and the US (2021), all linked to travel to endemic Nigeria or transmission from a travel-related index case.[6,7,10–12,24]
- This increase in incidence is postulated to be multifactorial: decreased cross-protection from the smallpox vaccine after vaccination cessation in the 1980s, virus mutation, changes in population distribution and land use and increased, better monitoring.[13,14,25,26]

2022 mpox outbreak

The 2022 outbreak was notable in several ways, foremost for its high case volume and concurrent multi-centered distribution in endemic and non-endemic countries. Additionally, a majority of affected individuals had a negative travel and animal exposure history. Further, many affected individuals were male with self-report recent sexual engagement with new or multiple male partners. Finally, many affected individuals had atypical presentations. In particular, patients presented not with centrifugal rash, but rather with few or a single lesion, lesions isolated to the genital or perianal/perineal region with relative sparing of the face and extremities, asynchronous lesions, and/or absence of prodrome.[15,16]

Otolaryngologic manifestations

- Listed from most to least frequently reported otolaryngological findings in observational studies, case series, case reports from the 2022 outbreak:

- **Cutaneous:** Vesicles and pustules with crusting over time. However, there are also reports of more involved skin lesions that have been misdiagnosed initially bacterial cellulitis, pyoderma gangrenosum, and herpesvirus.

- **Oral**: Oral cavity lesions are described as vesicles, ulcers, pustules, or ulcers.

- **Cervical lymphadenopathy**: Some studies explicitly report cervical lymphadenopathy; however, many report unspecified, perilesional lymphadenopathy.

- **Oropharyngeal**: Tonsillitis, tonsillar hypertrophy, tonsil ulcer/erosion, pharyngitis, and/or pharyngeal wall ulcer

- **Laryngeal**: Supraglottic edema, supraglottitis, supraglottic mucosal ulceration

- **Auricular**: Pinna papules and pustules

- In past outbreaks, dyspnea, nasal congestion, retropharyngeal abscess have been reported.
- There is a high co-infection rate with HIV, sometimes resulting in more severe presentations.

Work up and management

- Diagnosis via polymerase chain reaction of a specimen taken from the patient. The highest yield and most accurate diagnostic specimens are skin lesions. Of head and neck samples other than skin, saliva is preferred over an oropharyngeal/pharyngeal swab, which have low viral load and minimal likelihood of viability and has been determined not to have additional diagnostic value.[77] In fact, saliva load was found to peak earlier than that of blood.[22,78] Screening patients without skin lesion via pharyngeal, rectal, or blood samples is of limited utility.[79]
- For most immunocompetent patients, monkeypox infection is self-limited, and supportive care is sufficient. Options for symptomatic high-risk patient populations include use of tecovirimat, an anti-viral envelope agent, and brincidofovir and cidofovir, anti-DNA polymerase agents.

Occupational health considerations

- Proper surface cleaning is key. In a study in which the viral load was measured in the air, surfaces, and dust of a room belonging to an mpox patient, viral load was noted to peak on days 7-8 of the patient's illness.[73] Further, viable virus can linger up to one week.[74] Also to be aware of during head and neck exams, mpox viral shedding may persist orally after lesions resolve.[75]
- The CDC recommends that when working with confirmed monkeypox patients, HCW should don a gown, gloves, eye protection and an N95 grade respirator or equivalent. HCW who have unprotected exposure to monkeypox patients should undergo active surveillance for symptoms, including twice daily temperature checks for 21 days. Post-exposure prophylaxis is recommended to be given ideally within 4 days of exposure and acceptably within 4 to 14 days.[76] The CDC is recommending PrEP only for HCW performing diagnostic testing for orthopoxviruses and select others.[76]