



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Ophthalmic manifestation of monkeypox infection

Simone Vasilij Benatti, Serena Venturelli, Natalia Comi, Federica Borghi, Stefania Paolucci, Fausto Baldanti

A 39-year-old, White, bisexual male attended our sexual health clinic with proctitis and a cluster of vesicles (2–3 mm) in the anal region, which had presented 3 days previously. He declared having had multiple unprotected sexual encounters and being on pre-exposure prophylaxis for HIV prevention since 2019. Over the previous 3 weeks, he had travelled to France and Germany, before returning to Italy.

7 days before the vesicles appeared, he had experienced back myalgia, suspected fever (not measured), and a non-productive cough that resolved within 48 h. 4 days later, he developed conjunctivitis of the left eye, with a



Figure: Monkeypox infection manifested in the eye as conjunctival (mucosal) and periocular (cutaneous) vesicles of variable size. Vesicles appeared over the course of 7 days. Shown here on the patient's left eyelid (lateral, inferior).

small vesicle on the lower eyelid. After consulting an ophthalmologist, he was given topical co-formulated neomycin (3500 IU/mL), polymixin B (6000 IU/mL), and dexamethasone (1 mg/mL) in an ointment to be applied twice a day and in an eye drops formulation to be applied five times a day.

On examination at our clinic, he had three more vesicles each on the upper back and on the thigh, but no adenopathy. The left eye blepharconjunctivitis had evolved into a single whitish ulcer (10 mm) on the medial bulbar conjunctiva, with regular edges. The smaller vesicle on the lower eyelid (lateral; figure) was still present. Neither corneal, nor anterior chamber involvement, were found on ophthalmologic examination. Topical treatment, as outlined above, was continued to completion 2 weeks later.

Viral swabs from the cutaneous (perianal) and ocular vesicles, and from the oropharynx, were positive for HIV antibodies, hepatitis C virus antibodies (both ELISA), *Treponema pallidum* antibodies (chemiluminescence assay), and *Chlamydia trachomatis* DNA and *Neisseria gonorrhoeae* DNA (both multiplex PCR).

On re-evaluation at 3 weeks from symptom onset, the cutaneous and ocular vesicles were no longer visible and the eye had almost healed (redness remained). The proctitis had completely resolved.

Despite mucosal localisation of vesicles being not uncommon in monkeypox, the diagnosis might be overlooked. During the ongoing monkeypox outbreak, monkeypox should be included in the differential diagnosis of patients with vesicular and pustular eye lesions, especially in the presence of epidemiological links or risk factors.

Contributors

SVB, SV, FBo (infectious diseases), and NC (ophthalmology) were directly involved in patient care, conceived and wrote the manuscript, and edited the reviews. NC took the photographs. SP and FBa performed the virological testing and interpreted the results. Written informed consent for publication was obtained from the patient.

Declaration of interests

We declare no competing interests.

Copyright © 2022 Elsevier Ltd. All rights reserved.

Lancet Infect Dis 2022; 22: 1397

Published Online

July 29, 2022

[https://doi.org/10.1016/S1473-3099\(22\)00504-7](https://doi.org/10.1016/S1473-3099(22)00504-7)

Infectious Diseases Unit

(S V Benatti MD, S Venturelli MD, F Borghi MD) and

Ophthalmology Unit

(N Comi MD), ASST "Papa Giovanni XXIII", Bergamo, Italy;

Department of Clinical, Surgical, Diagnostics, and Pediatric Sciences, University of Pavia, Pavia, Italy

(S Paolucci MD,

Prof F Baldanti MD);

Microbiology and Virology

Unit, Fondazione IRCCS

Policlinico San Matteo, Pavia, Italy (S Paolucci, Prof F Baldanti)

Correspondence to:

Dr Simone Vasilij Benatti, Infectious Diseases Unit, ASST "Papa Giovanni XXIII", Bergamo 24129, Italy

sbenatti@asst-pg23.it