

Notes from the Field

Photokeratoconjunctivitis Outbreak Associated with Damaged Metal Halide Lamps — Maharashtra State, Western India, June 2016

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On June 13, 2016, the Pimpri-raj Primary Health Center in Aurangabad district, Maharashtra State, in western India reported learning of approximately 90 persons with red eyes and blurred vision. One day earlier, the patients had attended a gathering in Zalta village to acknowledge the contributions of a local political leader. An investigation by the Field Epidemiology Training Program (FETP) and officials from the Integrated Disease Surveillance Program (IDSP) in Aurangabad district was initiated to estimate the magnitude of the outbreak and identify reasons for its occurrence. The investigators determined that 92 (12%) of the 750 attendees had symptoms of keratoconjunctivitis, and four of six metal halide lamps used for illumination were damaged.

The team consisting of officials from IDSP and FETP trainees arrived in Zalta village on June 14. A case of keratoconjunctivitis was defined as the occurrence of any of the following eye-related symptoms in an event attendee since June 13: redness, tearing, eyelid swelling, photophobia, or foreign body sensation. Using a list obtained from the event organizers, all 750 attendees were interviewed in their homes to collect information on age, sex, and seating location during the event and to evaluate them for eye-related signs or symptoms and time of symptom onset. For persons who could not be contacted, the details about seating location and presence of eye symptoms were collected from other members of their households, villagers, or event organizers. An ophthalmologist examined all identified patients.

The event occurred on June 12 from 7:30 p.m. to 9:45 p.m. inside a temporary covered area. Six metal halide lamps affixed to high poles (about 3 meters [about 10 feet] from the ground) were used for illumination. Two lamps were on the speakers' platform, facing the speakers, and four were in front of the speakers' platform, facing the audience (Figure). A total of 750 persons, including 16 delegates (who were seated on the speakers' platform), attended the event. No food or drink was served during the program.

Among the 750 attendees, 92 (12%) met the case definition for keratoconjunctivitis, including all 16 delegates on the speakers' platform and 76 of 180 (42%) persons sitting in the first five rows (approximately 4–8 meters [approximately

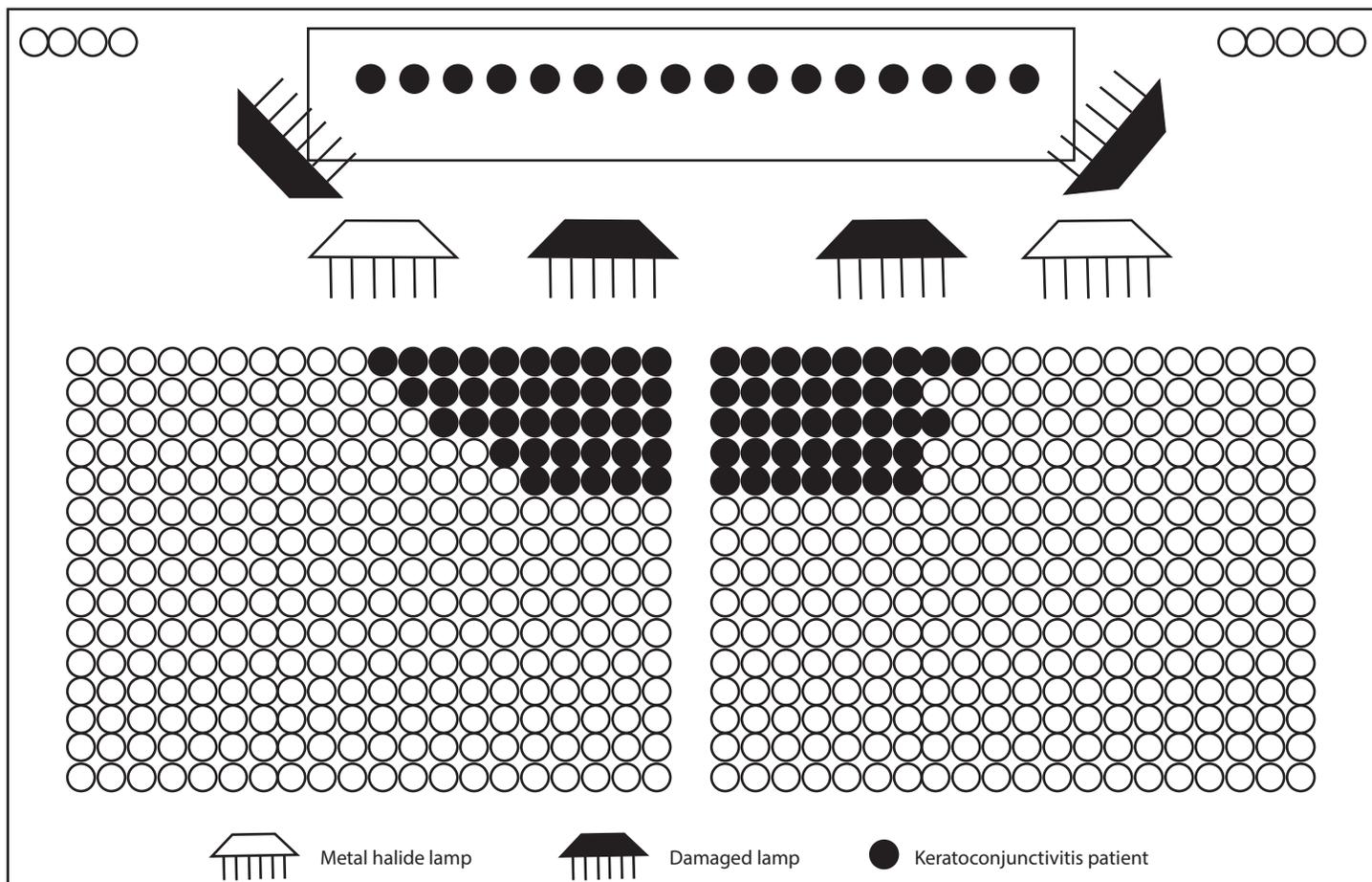
13–26 feet] from the lights); none of the 554 persons sitting in the middle or back rows (>10 meters [>33 feet] from the lights), or standing on either side of the speakers' platform developed symptoms (Figure). Attack rates among various groups were compared using a chi-square test, with the results expressed as *p* values.

Attack rates did not differ by sex (females: 16% [13 of 80], males: 12% [79 of 670]; *p* = 0.25). The attack rate was 14% (30 of 215) among persons aged <30 years, 12% (55 of 455) among persons aged 30–59 years, and 9% (7 of 80) among persons aged ≥60 years (*p* = 0.47). All patients reported redness, photophobia, swelling of eyelids, watering of eyes, and blurred vision. Other symptoms included eye pain (62 [67%]) and temporary loss of vision (65 [71%]). Twenty-one (23%) patients had evidence of corneal edema on ophthalmologic examination. Among the 92 patients, 34 (37%) had onset of symptoms during the event, 11 (12%) developed symptoms within 1 hour of the event, and 47 (51%) developed symptoms 1–3 hours after the event. Attack rates were significantly higher among persons sitting in closer proximity to metal halide lights (92 of 196 [47%]) compared with persons on either side of the platform or in middle or back rows 0 of 554 [0%], *p*<0.00). The patients received supportive treatment.

In the course of the investigation, the team learned that the metal halide lamps, which had been purchased for lighting a cricket stadium and were not meant to be used indoors, were mistakenly used for the political event. In addition, four of the six metal halide lamps were found to be damaged (Figure). Metal halide lamps produce an electric arc that travels through a mixture of mercury and metal halide gases, generating an intense white light. These lamps have a coated outer glass envelope surrounding the arc tube, which serves to filter out ultraviolet light (1). The four damaged lamps had broken outer envelopes. Metal halide lamps with a broken outer envelope emit ultraviolet radiation and pose a risk for keratoconjunctivitis (2,3). Previous outbreaks after exposure to broken metal halide lamps have been reported (2,3).

This is the first reported outbreak from India of keratoconjunctivitis associated with the use of broken metal halide lights indoors. In India, metal halide lamps are used for sports facilities, stadiums, large auditoriums, and convention halls. Although these lamps are not routinely used during temporary mass gatherings, accidental use of damaged lamps can cause such outbreaks. Persons handling these lamps should be made aware of the health hazards of damaged lamps and instructed not to use lamps with a broken outer envelope.

FIGURE. Keratoconjunctivitis attack rates* among attendees at a political event, by seating location — Zalta village, Aurangabad, India, June 2016



* Attack rates: speakers' platform = 100% (16 of 16); either side of platform = 0% (0 of 9); front rows = 42% (76 of 180); middle and back rows = 0% (0 of 545).

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