

CLINICAL IMAGES

Koplik spots revisited

Sheela Xavier MBBS DCH, Sarah E.D. Forgie MD

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Affiliations: Department of Pediatrics (Xavier, Forgie), University of Alberta, Edmonton, Alta.

Correspondence to: Sarah Forgie, sforgie@ualberta.ca

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An otherwise healthy, fully vaccinated, 10-month-old girl presented to the emergency department after seeing her family physician with a one-day history of rash.

The patient had been exposed to someone with confirmed measles on a domestic flight two weeks earlier. She was alert but febrile on physical examination, and she had a red maculopapular rash coalescing on her face with discrete lesions on her trunk. The patient had multiple 2–4 mm bluish-white plaques on a red background on her buccal mucosa (Figure 1). Further testing confirmed the patient had measles.

Measles, a notifiable disease in Canada, is spread by airborne and droplet routes with an incubation period of 10–12 days.¹ The diagnosis is confirmed with serology (immunoglobulin M or a four-fold rise in convalescent immunoglobulin G), or detection of the virus (by culture or nucleic acid testing) in the nasopharynx or urine.¹ Early symptoms occur two to four days before the

exanthem and include fever, cough, coryza and conjunctivitis; in addition, Koplik spots can appear one to four days before the widespread rash.¹ Although Koplik was not the first to describe his eponymous spots, he emphasized their association with measles, their evolving appearance and their importance in infection control.²

Koplik spots start as bluish-white “grains of salt on a red background” opposite the molars on the buccal mucosa. They may also appear on conjunctival folds or on vaginal or gastrointestinal mucosa.³ The bluish-red halo is caused by a collar of dilated veins around the submucosal gland duct, whereas the white portion is likely the result of the destruction of glandular epithelial cells.⁴ Koplik spots are present in more than 70% of patients with measles,³ and “the height of the eruption is reached just as the skin eruption has appeared and is spreading.”⁵ As the widespread rash progresses, the rash on the mucosal membrane loses “the character of discrete spotting and [becomes] a diffuse red background with innumerable bluish white specks scattered on its surface.”⁵ Ultimately, the mucous membrane reverts back to its normal appearance well before the skin eruption resolves. Differential diagnosis of Koplik spots includes Fordyce aphthae (which lack a bright red background), aphthous ulcers (which are painful and less numerous) and parvovirus B19 infection.^{6,7}



Figure 1: Photograph showing Koplik spots on the buccal mucosa of a 10-month-old girl who had been exposed to the measles virus two weeks before her presentation. The patient was later confirmed to have measles.

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