Answer to Photo Quiz: Measles

(See page 1835 in this issue [doi:10.1128/JCM.06823-11] for photo quiz case presentation)

Although the patient had received his childhood immunizations, he had been potentially exposed to an adult with measles 2 weeks prior to admission while visiting a friend. Measles IgM and IgG titers were ordered, but the results were not immediately available. Because of the potential measles exposure and findings compatible with measles, i.e., conjunctival suffusion and maculopapular rash, he was placed on airborne precautions until the diagnosis of measles could be established or ruled out. Consistent with measles were thrombocytopenia, atypical lymphocytes, mildly decreased serum sodium, and an elevated serum transaminase level (2–4). Against the diagnosis of measles were his previous immunization history and the profuse and prolonged watery diarrhea as a major manifestation of measles.

Because measles virus is transmitted via the airborne route, the potential for airborne transmission, even if distant from the index case, is great, and measles titers may not be fully protective. Typically, measles begins with a blotchy discrete maculopapular rash starting on the hairline, rapidly extends to the face, and progresses over 3 days to involve the rest of the body, sparing the palms and the soles. The interval between infection and rash is typically 12 to 14 days. Patients are considered infectious from 4 days before the onset of the rash until 4 days after the rash. During the prodromal period, common manifestations of measles are dry cough, headache, and conjunctival suffusion. Runny nose is typical, and tonsils may be enlarged. The buccal mucosa is congested and dark red. Early in the disease, Koplik's spots may be present on the buccal mucosa opposite the molars and are easily seen against the dark red buccal mucosa. Koplik's spots may be differentiated from Fordyce's spots, which are a normal variant. Fordyce's spots appear, like Koplik's spots, as "grains of salt," but the buccal mucosa is pale and not dark red/congested. Koplik's spots are found on the buccal mucosa 2 to 3 days before the onset of the rash and fade quickly as the rash develops. Koplik's spots are usually no longer visible after the first or second day of the rash (2, 4).

The involvement of measles in the epithelial cells of the respiratory tract is manifested by dry cough. The combination of runny nose and dry cough is typical of measles. During the prodrome, some patients have nausea, vomiting, or mild, self-limiting diarrhea. Measles enteritis is most common in children and was common in England more than 50 years ago (2). The invasion of gastrointestinal mucosa by measles has been described, but prolonged profuse watery diarrhea is rare (2). Abdominal pain is also not uncommon, and if it occurs in the right lower quadrant, it may mimic appendicitis (pseudoappendicitis) (2–4). Hepatic involvement, i.e., mild/transient elevations of serum transaminases with measles, is relatively rare in adults but may occur as it did in this case.

Warthin was the first to appreciate the diagnostic significance of multinucleated giant cells in the tonsils of measles patients.

Warthin-Findelkey cells are multinucleated giant cells found in cells of the nasal mucosa, tonsils, and appendix (6). Children presenting with fever and right lower quadrant pain thought to have appendicitis have had the diagnosis of measles established by the pathologist demonstrating Warthin-Finkeldey cells in the removed appendix. Like Koplik's spots, Warthin-Finkeldey cells precede the appearance of the rash by 2 to 3 days and, like Koplik's spots, rapidly disappear early after the rash. The cytopathic effects (CPE) of measles, i.e., Warthin-Finkeldey cells in nasal cytology specimens, are diagnostic of measles (1, 5, 6).

A rapid diagnosis of early measles may be made using a nasal swab to demonstrate Warthin-Finkeldey cells in stained nasal mucosal cells. This patient's elevated measles titers (IgM, >1:32; IgG, >1:512) were reported 7 days after they were drawn and 3 days after the diagnosis of measles was confirmed cytologically by demonstrating Warthin-Finkeldey cells in stained smears of nasal mucosal cells.

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