Outbreak of Measles Among Persons With Prior Evidence of Immunity, New York City, 2011

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Abstract

Background. Measles was eliminated in the United States through high vaccination coverage and a public health system able to rapidly respond to measles. Measles may occur among vaccinated individuals, but secondary transmission from such individuals has not been documented.

Methods. Suspected patients and contacts exposed during a measles outbreak in New York City in 2011 were investigated. Medical histories and immunization records were obtained. Cases were confirmed by detection of measles-specific immunoglobulin M and/or RNA. Tests for measles immunoglobulin G (IgG), IgG avidity, measurement of measles neutralizing antibody titers, and genotyping were performed to characterize the cases.

Results. The index patient had 2 doses of measles-containing vaccine; of 88 contacts, 4 secondary patients were confirmed who had either 2 doses of measles-containing vaccine or a past positive measles IgG antibody. All patients had laboratory confirmation of measles infection, clinical symptoms consistent with measles, and high-avidity IgG antibody characteristic of a secondary immune response. Neutralizing antibody titers of secondary patients reached >80 000 mIU/mL 3–4 days after rash onset and that of the index was <500 mIU/mL 9 days after rash onset. No additional cases of measles occurred among 231 contacts of secondary patients.

Conclusions. This is the first report of measles transmission from a twice-vaccinated individual with documented secondary vaccine failure. The clinical presentation and laboratory data of the index patient were typical of measles in a naive individual. Secondary patients had robust anamnestic antibody responses. No tertiary cases occurred despite numerous contacts. This outbreak underscores the need for thorough epidemiologic and laboratory investigation of suspected cases of measles regardless of vaccination status.

Key words measles outbreak immunity vaccine failure waning immunity

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Measles Acquisition and Transmission, Despite Evidence of Immunity

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