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Erythema multiforme following pneumococcal vaccination

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Abstract

Erythema multiforme (EM) is an acute and usually self-limited immune-mediated mucocutaneous disorder that is a hypersensitivity reaction to drugs, infections, and vaccines. Clinically, it is characterized by maculopapular, target-like lesions symmetrically distributed on the extremities (minor form) or additionally affecting one or more mucous membranes and causing epidermal detachment involving < 10% of the total body surface area (major form). We report a novel association between pneumococcal vaccination and the development of EM in a 2.5-year-old boy. The introduction of 13-valent-polysaccharide-pneumococcal-conjugate vaccine (PCV13) into vaccination programs has resulted in a reduced incidence of pneumococcal disorders. Systemic side effects of PCV13 include chills, fever, headache, vomiting, fatigue, arthralgia, myalgias, decreased appetite, and diarrhea, whereas its cutaneous adverse reactions are local injection site reactions, Sweet's syndrome, and deep morphea. EM is triggered by a variety of vaccines; however, as far as we know, it has not previously been reported in association with pneumococcal vaccine. Although a fortuitous occurrence of EM in our patient cannot be absolutely excluded, it appears very likely that PCV13 caused the patient's eruption, considering the history and the laboratory data, which point toward a lack of any other causative factors.

Keywords: Erythema multiforme, pneumococcal vaccine

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Introduction

Erythema multiforme (EM) is an acute and usually self-limited immune-mediated mucocutaneous disorder. Clinically, it is characterized by maculopapular, target-like lesions that are symmetrically distributed on the extremities (minor form) or additionally affect one or more mucous membranes and cause epidermal detachment involving less than 10% of total body surface area (major form) (1). Although its pathogenetic mechanisms are far from being completely understood, EM is thought to be a hypersensitivity reaction to drugs (sulfonamides, anticonvulsants, antibiotics, antituberculous agents, and non-steroidal anti-inflammatory drugs), infections (herpes simplex virus 1 & 2, *Mycoplasma pneumoniae*, and various fungi) and vaccines (2). We report a novel association between pneumococcal vaccination and the development of EM in a 2.5-year-old boy.

Case report

A previously healthy 2.5-year-old boy presented with a 2-day history of a slightly pruritic cutaneous eruption that had appeared 4 days after administration of the 13-valent-polysaccharide-pneumococcal-conjugate vaccine (PCV13). The patient had received no drugs prior to the appearance of the eruption, he exhibited no signs or symptoms of atopy, and his family history was negative for atopy. Physical examination revealed a healthy-looking young boy whose growth and development were within normal range. Signs and symptoms of infections were absent. There were target-like papular lesions symmetrically affecting the extremities, whereas the trunk and the mucosae were spared. These lesions consisted of three concentric zones: a central dark red zone, which in some cases revealed necrosis, an intermediate pink edematous zone, and an external erythematous one. There was no evidence of lymphadenopathy or hepatosplenomegaly. Routine hematological, biochemical, and microbiological tests (throat swabs), as well as serological tests (hepatitis B and C, *Mycoplasma pneumoniae*, Coxsackie A & B, Epstein–Barr virus, CMV, herpes simplex and zoster virus, enterovirus, and *Toxoplasma gondii*) revealed normal or negative results. Stool investigations for parasites and ova were negative. Correlation of the history and the clinical morphology of skin lesions established the diagnosis of erythema multiforme (minor form). Biopsy and histological investigation of lesional skin were not performed because the patient's parents refused to grant permission. The eruption spontaneously resolved within 15 days.

Discussion

The introduction of pneumococcal conjugated vaccines into international immunization programs has caused a considerable worldwide decline in the incidence of pneumococcal disorders. PCV13 includes specific protein-conjugated pneumococcal polysaccharides of 13 serotypes, is routinely given to children at 2, 4, 6, and 12 to 15 months of age, and is also recommended for individuals (2 to 64 years old) with certain health conditions, and for all adults 65 and older (3). Systemic side effects of PCV 13 include chills, fever, headache, vomiting, fatigue, arthralgia, myalgias, decreased appetite, and diarrhea (4). Furthermore, vaccination with PCV13 is reportedly associated with the following adverse cutaneous reactions: topical reactions at or near the injection sites (redness, edema, pain, abscess, cellulitis, itching granuloma, keratoacanthoma, and lichenoid dermatitis) (4), Sweet's syndrome (5), and deep morphea (6).

EM is known to be triggered by a variety of vaccinations, including BCG, diphtheritis-pertussis-tetanus, measles-mumps-rubella, hepatitis B, meningitis, smallpox, human papillomavirus, and rabies (7); however, as far as we know, EM has not previously been reported in association with pneumococcal vaccination. Although a fortuitous occurrence of EM in our patient cannot be clearly excluded, it appears very likely that PCV13 caused his eruption, considering the history and the laboratory data, which point toward a lack of any other causative factors.

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