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Case Report Open Access

Is Kawasaki Disease a Side Effect of Vaccination as Well?

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Abstract

Different subtypes of vasculitis have been reported after vaccination in adults. However, only one case of Kawasaki disease in an infant after hepatitis B vaccination has been described. We report a case of Kawasaki disease in a 2 month-old infant who developed the Kawasaki disease 1 day after receiving his first dose of diphtheria tetanus-acellular pertussis, Haemophilus b and pneumococcal conjugate vaccine

Keywords: Vaccination; Kawasaki disease; Immunization

Introduction

Kawasaki disease (KD) is an acute, multisystemic vasculitis, manifested by a constellation of signs and symptoms, including fever, rash, conjunctival injections, cervical lymphadenopathy, oral mucosal changes, and characteristic extremity changes. The etiology of KD is unclear [1]. Only rare cases of vasculitis after vaccination have been reported [2-5]. Moreover, the occurrence of KD in the first weeks of life is very rare [6,7]. We report a case of KD in a 2 month-old infant who developed the Kawasaki disease 1 day after receiving his first dose of diphtheria tetanus- acellular pertussis, poliovaccine, Haemophilus b conjugate vaccine (DTaP-IPV-Hib) (Infanrix, GlaxoSmithKline Vaccines) and pneumococcal conjugate vaccine (PCV13) (Prevenar, Pfizer).

Case Report

A 2 month old infant was admitted to the hospital 1 day after receiving his routine 2-month immunizations, including DTaP-IPV-Hib and PCV13 because of fever. Initially this fever was attributed to the vaccination by another department. But, the patient was admitted to our hospital's department of pediatrics after 6 days followed by receiving his vaccination because of generalized rash and high-grade persistent fever not relieved by acetaminophen. On the physical examination, he was febrile and extremely irritable. His vital signs included an axillary temperature of 38.9°C, heart rate of 164 beats per minute, respiratory rate of 46 breaths per minute, and a blood pressure of 74/41 mmHg.

Pharynx was hyperemic. He had strawberry tongue with lip fissures, generalized rash and non-purulent conjunctivitis. Lungs and heart examination was unremarkable. Liver and spleen were within normal limits. Laboratory findings included a white blood cell (WBC) 23400/mm^3, hemoglobin 8.2 g/dL, platelets 826000/mm^3, C-reactive protein (CRP) 106 mg/L (reference: 0-5 mg/L), erythrocyte sedimentation rate (ESR) 76 mm/hour (reference: <15 mm/hour), albumin 3 g/dl (reference: 3.8-5.4 g/dl), alanin aminotransferaz (ALT) 51 U/L (reference: 0-40 U/L), aspartat aminotransferaz (AST) 73 U/L (reference: 0-40 U/L), The sodium, potassium, and calcium concentrations were normal. Chest roentgenography and electrocardiography revealed normal. Echocardiography showed generalised dilatation of the left and right coronary arteries (Figure 1).

Main left coronary artery diameter was measured 4 mm (range: 0.77-2.03 mm, Z-score: +8.21) and main right coronary artery diameter was measured 3.09 mm (range: 0.55-1.82 mm, Z-score: +6.02). Based on the clinical and cardiac findings, the diagnosis of KD was made. A single dose of intravenous immunoglobulin (IVIG) 2 g/kg was administered. Salicylic acid (80 mg/kg/day) was started. His body temperature returned to normal within 12 hours IVIG administration.

Three days after IVIG administration CRP decreased to 18 mg/L, WBC decreased to 14200/ mm^3, platelets increased to 1001000/mm^3, albumin increased to 3.4 gr/dl, and ALT -AST returned to normal values. Bacterial cultures performed on admission showed no growth of pathogens. Rectal and nasopharyngeal swabs were sent for adenovirus and enterovirus cultures, and the results were negative. Cytomegalovirus IgM, Epstein-Barr virus capsid IgM, parvovirus IgM antibody screens were also negative. On day 8 of the hospitalization he was discharged home with salicylic acid (5 mg/kg/day). Three months later in follow-up, coronary artery sizes returned to normal values.

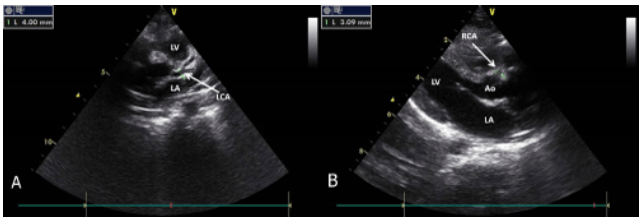

Figure 1: An echocardiographic apical anterior and parasternal long axis view during the acute illness showing diffusely dilated left and right main (arrows) coronary arteries. Main left coronary artery diameter was measured 4 mm. Main right coronary artery diameter was measured 3.09 mm. Ao; aorta, LA; left atrium, LV; left ventricle, LCA; left coronary artery, RCA; right coronary artery.

Discussion

Vaccinations are usually well tolerated. Common side effects include local itching, myalgia, malaise, headache, lymphadenopathy, bandage reaction, generalized pruritus, fever, local rash and generalized rash [8]. KD can occur in a temporal relationship with vaccination, but a causal association has not been established. Treadwell et al. [9] found no association between KD and vaccination during the 30 days before disease onset. In the literature different subtypes of vasculitis have been repeatedly reported after vaccination [3-5]. However, only one case of KD in a 35-day-old infant 1 day after hepatitis B vaccination has been described [2]. We describe first case, to our knowledge, of KD in a 2 month-old infant with a strong temporal association with the first dose of DTaP-IPV-Hib and PCV13 vaccination. In our case virological and bacterial study findings were negative for bacteria, Coxsackie virus, parvovirus and other enteroviruses. Serologic studies also failed to show elevation of IgM level of viruses. The presence of prolonged fever, rash, conjunctivitis, mucous membrane erythema, increased levels of acute phase reactants (including significant thrombocytosis) and echocardiographic dilation of the coronary artery favor the diagnosis of KD. Moreover, the patient responded promptly to IVIG therapy. The pathogenic mechanism of KD in this infant is not clear. The possible mechanisms of vessel damage after vaccination may be abnormal immunological activation [5]. KD in infancy is rare. In study patients with KD only 1.67% was under 3 months of age and only 6 were less than 30 days of age [6]. In another study there were no cases of KD in infants less than 2.25 months of age [7].

Overall, DTaP-IPV-Hib and PCV13 vaccination are very safe. KD may be a rare side effect of vaccination. Therefore, physicians should be aware of possible serious side effects resulting from vaccination.

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