Diffuse cutaneous reaction following PPV-23 pneumococcal vaccine: an immunisation-associated hypersensitivity vasculitis

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Accepted 4 March 2020

DESCRIPTION

A 76-year-old man attended our emergency department with a 7-day history of skin rash and itchiness and was subsequently admitted to the hospital with a possible small vessel vasculitis. On further questioning, he admitted receiving a pneumococcal vaccine for the first time 3 days before his symptoms. He also received his seasonal influenza vaccine simultaneously, which he had received regularly for the past 10 years without any reactions. He denied any other specific symptoms besides his rash, which started around the injection site then eventually spread to most of his body (sparing the head and neck). He had a background of chronic obstructive pulmonary disease, hypertension, atrial fibrillation and a metallic aortic valve in addition to active smoking. His medications remained unchanged for the preceding 2 years.

His clinical examination established normal vital signs without fever or distress. His skin examination revealed diffuse rash to all his limbs and torso (figures 1–3). The cutaneous eruption was a combination of maculopapular, petechial, purpuric and ecchymotic lesions with few scattered haemorrhagic blisters. Few necrotic lesions also noted to his right middle finger (figure 1B).

His laboratory work revealed neutrophil leucocytosis, elevated C-reactive protein and mildly reduced lymphocytes and eosinophils. The autoimmune and viral screening was negative, including normal immunoglobulins and complements levels in the absence of circulating cryoglobulins. Urine examination showed no red cells or protein. His skin biopsy (punch) revealed marked papillary dermal oedema and prominent superficial and mid-dermal perivascular lymphocytic infiltration with numerous eosinophils but negative direct immunofluorescence. The findings were felt to be consistent with dermal hypersensitivity response to a possible

Figure 2 Both lower limbs front (A) and back (B).

drug reaction, which in this case, the pneumococcal vaccine was the most probable trigger given the sequence of events and the absence of other precipitants. The patient received 40 mg prednisolone daily and 10 mg cetirizine, which led to significant clinical improvement.

Pneumococcal polysaccharide vaccine contains 23 of the most prevalent and invasive pneumococcal strains (Pneumovax 23). Hypersensitivity vasculitis is a cutaneous small vessel vasculitis mediated through immune complex deposition that is triggered by different factors such as drugs, infections, neoplasm or in association with other inflammatory conditions or connective tissue diseases.¹ However, the cause may remain unclear in about 30%–50% of cases.²

The diagnosis is usually secured with a punch biopsy of a fresh lesion ideally between 24–48-hour-old for histopathology, and 8–24-hour-old for direct immunofluorescence.³ A 2014 population-based study in the USA had estimated an incidence of 45 cases per million per year.⁴ Various vasculitides were reported in association with numerous vaccinations, classically cutaneous vasculitis and commonly within 10 days.⁵ Severe forms of systemic vasculitis after

Figure 1 Both upper limbs left (A) and right (B).

Figure 3 Front and back of the torso.

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To cite: Abdalla A, Sebaoui S, Alraqi S. *BMJ Case Rep* 2020;**13**:e234714. doi:10.1136/bcr-2020-234714

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pneumococcal vaccine had also been reported, including Kawasaki disease, polymyalgia rheumatica, CNS vasculitis and type II mixed cryoglobulinemia.^{6,7} Moreover, few reports had emerged on the risk of inducing severe local and systemic reactions as well as a disease flare to stable patients with Behcet's disease triggered by pneumococcal vaccine,^{8,9} a cohort typically strongly encouraged to receive immunisation against vaccine-preventable infections.¹⁰

Learning points

- ▶ Vasculitis secondary to immunisation is uncommon but increasingly reported and should be considered in the differential diagnosis of possible drug reactions.
- ▶ While immunisation is recommended for subgroups including elderly patients with multi-comorbidities, it can sometimes lead to significant morbidity.

Acknowledgements Department of clinical photography, The Mater Misericordiae University Hospital.

Contributors AA and SS drafted the manuscript; SA revised and approved the script. All authors shared the clinical care of this patient.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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