CASE REPORT

A rare case of Raynaud's vasculitis secondary to Hepatitis B vaccination: The induced auto-immune attack syndrome

Vijairam Selvaraj[1,2], Owolabi Ogunneye[1,2], Tara Lagu[1,2,3], Stephen Ryzewicz[1,2]

1. Division of General Medicine, Baystate Medical Center, Springfield, USA. 2. School of Medicine, Tufts University, USA. 3. Center for Quality of Care Research, Baystate Medical Center, Springfield, USA

Correspondence: Dr. Vijairam Selvaraj. Address: 759 Chestnut St S2570, Springfield, MA 01199, USA. Email: Vijairam.selvaraj@bhs.org

Received: January 16, 2014 **Accepted:** February 7, 2014 **Online Published:** February 17, 2014
DOI: 10.5430/crim.v1n1p17 **URL:** http://dx.doi.org/10.5430/crim.v1n1p17

Abstract

Raynaud's syndrome is a cutaneous vasculitis associated with a variety of underlying conditions such as connective tissue disorders, occupational exposures, drugs and very rarely vaccines. We report a case of Hepatitis B vaccination-induced Raynaud's vasculitis in a previously healthy 46-year-old male. The sequence of events along with acute onset of symptoms with confirmation of small vessel vasculitis by CT angiogram and exclusion of other recognized etiologies was consistent with vaccine-induced vasculitis. Although extremely rare, physicians must be made aware of instances of vaccination-induced vasculitis (small and medium vessel) in a patient presenting with vasculitic symptoms.

Key words

Hepatitis B vaccine, Raynaud's, Vasculitis

1 Introduction

Raynaud's phenomenon is a vasospastic disorder causing discoloration of fingers, toes or other areas usually triggered by cold or emotional stress [1]. Raynaud's syndrome is a cutaneous vasculitis associated with a variety of underlying conditions such as connective tissue disorders, occupational exposures, drugs and very rarely vaccines [1]. We herein describe a case of Hepatitis B vaccination-induced Raynaud's vasculitis in a previously healthy 46-year-old male.

2 Case presentation

A previously healthy 46 year old Hispanic male was admitted to our hospital with a two week history of bilateral throbbing finger pain, purplish discoloration, finger numbness, light-headedness and three day history of black tarry stools. Three weeks prior to admission, he received his first dose of recombinant Hepatitis B vaccine. One week after vaccination, he presented to his primary care physician with similar symptoms. Throbbing finger pain was worst in the cold, at rest and at night. He presented to the emergency department of this facility one week preceding this admission with concerns of digital ischemia and was advised to take ibuprofen which was discontinued after 3 days due to no relief.

Physical examination revealed bilateral tenderness and edematous fingertips, splinter hemorrhages underneath all of the fingernails with some duskiness to the tips of the thumb and index finger on the right hand. He did not have palpable skin rashes or other skin findings on exam.

Laboratory findings were relevant for mild anemia, elevated WBC, ESR, CRP, C3, C4 and CH 50. ANA was a 1:100 nucleolar pattern. Serologic panel for Rheumatoid disease, Systemic Sclerosis, Mixed Connective Tissue Disease, Hepatitis and ANCA associated diseases were negative. Hypercoagulable workup was negative. Urinalysis revealed trace albuminuria, few RBCs and no eosinophils. Hemoccult test was positive.

Bilateral upper extremity CT angiogram revealed narrowing of the radial arteries and distal phalangeal arteries (see Figure 1) consistent with small vessel vasculitis.

Figure 1. CT Angiogram of Right hand showing narrowing of distal phalangeal arteries.

Given splinter hemorrhages, there was concern for Infective Endocarditis, although Echocardiography was noted to be normal. Chest X-ray revealed no pulmonary involvement. CT abdomen revealed signs of small intestinal vasculitis. Following discussion with Rheumatology, he was started on aspirin and calcium channel blockers with symptomatic improvement. He was also advised to avoid the remaining 2 doses of Hepatitis B vaccine.

3 Discussion

As shown in Table 1, a number of differential diagnoses were considered and excluded based on clinical history, physical exam and lab testing.

Generally, there is no causative link between administration of Hepatitis B vaccine and the occurrence of an adverse event. However, the chronology of events along with acute onset of symptoms with confirmation of small vessel vasculitis by CT angiogram and exclusion of other recognized etiologies was consistent with vaccine-induced vasculitis.

 ISSN 2332-7243 E-ISSN 2332-7251

The pathology of this disorder is most likely immune-mediated [2]. In the excess of antigen, soluble immune complexes form that cause complement activation and release of inflammatory mediators leading to systemic reactions. There have been reports of systemic hypersensitivity reactions consisting of perivascular lymphocytic infiltrate in the dermis following Hepatitis B vaccination [3]. Proof of vasculitis can be obtained either by histologic examination or angiography. There was no histologic confirmation of the diagnosis in our case.

Table 1. List of differential diagnoses excluded based on history, exam and lab testing

Differential diagnoses	Reason for exclusion
Polyarteritis nodosa	Lack of symptoms meeting criteria + Negative Hepatitis panel
Granulomatosis with polyangiitis	No pulmonary involvement + ANCA negative + no significant hematuria
Churg-Strauss Syndrome	ANCA negative + no eosinophilia + no history of asthma
Microscopic polyangiitis	ANCA negative + normal urine analysis + no pulmonary involvement
Infective Endocarditis	Criteria not met + negative Echocardiography
Atypical vasculitis	Negative antihistone antibodies
Henoch-Schönlein purpura	No palpable purpura + atypical age + no significant hematuria
Cryoglobulinemia	High complement levels + negative hepatitis panel
Leukocytoclastic vasculitis	No skin findings such as palpable purpura or ulceration
Behçet's syndrome	No oral or genital lesions
Connective disease associated vasculitis	
• Rheumatoid Arthritis	No history of symptoms meeting criteria + Rheumatoid factor negative
• Systemic Lupus	ANA 1:100 nucleolar pattern + negative anti-Smith, anti-DNA antibodies
• Sjogren's Syndrome	No history of symptoms meeting criteria + negative antibodies
Mixed Connective Tissue Disorders	Negative anti U1 RNP
Systemic Sclerosis	Skin findings present + negative scleroderma antibodies
Buerger's disease	No evidence of corkscrew collaterals on Ct angiogram
Viral infections	Hepatitis panel negative
Cholesterol emboli	Urine analysis negative for eosinophils

In spite of its widespread use, adverse effects of Hepatitis B vaccination are rare with no systemic effects. However, neurological complications such as cerebellar ataxia [4], transverse myelitis [5], facial palsy [6], Guillain-Barre syndrome [7], glomerulonephritis [8], erythema multiforme [9] and ophthalmologic complications [10] have been reported. Fewer than twenty such cases of vasculitis have been reported in the literature. There have been instances of vasculitis that have been reported with other antiviral vaccines such as Hepatitis A [11], small pox [12] and rubella.

4 Conclusion

It can be concluded that antiviral immunization such as Hepatitis B vaccination can rarely induce vasculitis. Physicians should be aware of rare instances of small and medium vessel vasculitis [13]. Patients should be informed of this rare potential side effect of Hepatitis B vaccination prior to administration and physicians made aware of vaccination-induced Raynaud's vasculitis in the differential diagnosis of a patient presenting with vasculitic symptoms.

References

[1] O'Connor CM. Raynaud's phenomenon. J Vasc Nurs. 2001; 19(3): 87-92. http://dx.doi.org/10.1067/mvn.2001.117786

[2] Carmeli Y, De-Medina T. Serious Hepatitis B vaccine adverse reactions, are they immune-mediated? Vaccine. 1993; 11: 1358-9. http://dx.doi.org/10.1016/0264-410X(93)90115-E

[3] Allen MB, Cockwell P, Page RL. Pulmonary and cutaneous vasculitis following hepatitis B vaccination. Thorax. 1993; 48: 580-1. http://dx.doi.org/10.1136/thx.48.5.580

[4] Deisenhammer F et al. Acute cerebellar ataxia after immunization with recombinant hepatitis B vaccine. Acta Neuro Scanda. 1994; 89: 462-3. http://dx.doi.org/10.1111/j.1600-0404.1994.tb02667.x

[5] Tartaglino LM et al. MR imaging in a case of postvaccination myelitis. Am J Neuroradiol. 1995; 16: 581-2.
[6] Ganry O et al. Paralysie faciale peripherique faisant suite a une vaccination contre l'hepatite B. Therapie. 1992; 47-437-8.
[7] Tuohy PG. Guillain-Barre syndrome following immunization with synthetic hepatitis B vaccine. N Z Med J. 1989; 102-114-5.
[8] Carmeli Y, Oren R. Hepatitis B vaccine side-effect. Lancet. 1993; 341: 250-1. http://dx.doi.org/10.1016/0140-6736(93)90123-X
[9] Wakeel RA, White MI. Erythema multiforme associated with hepatitis B vaccine. Br J Dermatol. 1992; 126: 94-5. http://dx.doi.org/10.1111/j.1365-2133.1992.tb08418.x
[10] Baglivo E, Safran AB, Borruat FX. Multiple evanescent white dot syndrome after hepatitis B vaccine. Am J Ophthal. 1996; 122: 431-2.
[11] Bani-Sadr F, Gueit I, Humbert G. Vasculitis related to Hepatitis A vaccination. Clin Inf Dis. 1996; 22: 596. http://dx.doi.org/10.1093/clinids/22.3.596
[12] Somer T, Finegold SM. Vasculitides associated with infections, immunization and antimicrobial drugs. Clin Inf Dis. 1995; 20: 1010-36. http://dx.doi.org/10.1093/clinids/20.4.1010
[13] A Zaas, P Scheel, A. Venbrux and D B Hellmann. Large artery vasculitis following recombinant hepatitis B vaccination: 2 cases. J. Rheumatol. 2001; 28: 1116-1120.

 ISSN 2332-7243 E-ISSN 2332-7251