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Case report

Bilateral bulbar subconjunctival hemorrhage associated with H1N1 vaccination

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ABSTRACT

Subconjunctival hemorrhage (SCH) is a common eye disorder that is characterized by the sudden onset of a flat area of bleeding under the conjunctiva. Although SCH is a well-known and relatively common disease, the cause in a number of cases remains unknown. Here, we report an unusual ocular presentation of bulbar SCH in a patient who had received an influenza vaccine. Patients who present with SCH other than trauma episode should be evaluated with metabolic diseases or coagulopathy. Although there are rare cases of SCH related to vaccination, we should closely follow a patient if there is a risk of the SCH becoming bleeding disorder. To our knowledge, the features of SCH related to vaccination have not been reported.

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1. Introduction

Subconjunctival hemorrhage (SCH) is a common eye disorder that is characterized by the sudden onset of a bleeding area under the conjunctiva. Although SCH is a well-known and relatively common disease, the cause in a number of cases remains unknown. Here, we report an unusual ocular presentation of bulbar SCH in a patient who had received an influenza vaccine.

2. Case presentation

A previously fit and active 41-year-old male teacher came into our emergency department after a routine influenza vaccination. The symptoms occurred about 4 hours after he had received an influenza vaccination (AdimFlu-S, Adimmune corporation, Taichung, Taiwan). The patient reported the sudden appearance of redness in both eyes (Fig. 1) and the appearance of a skin rash over the lower face to the anterior chest (Fig. 2). The vaccine contained an A/California/7/2009 (H1N1) virus-like strain and A/California/7/2009 (H1N1) viral strains (Reassortant NYMC X-179A), which had been recommended for the 2009 (H1N1) influenza A pandemic. The patient had previously been healthy, without a history of recent infections or drug or egg allergies. Moreover, he had had no

spontaneous or refractory bleeding episodes in the past, and his family history was negative for such complaints.

Laboratory investigation revealed no anemia, thrombocytopenia, leukocytosis or lymphocytosis. The bleeding time, prothrombin time, activated partial thromboplastin time and the D-dimer assay were normal. With the exception of a mildly elevated ferritin level (405 ng/ml; normal: 28–365 ng/ml), the immune-factor tests for antineutrophil cytoplasmic antibodies, antinuclear antibody, complement 3, complement 4, antistreptolysin O titer and immunoglobulin E level were all within normal range. The Pharmacia CAP test showed a negative allergic reaction to egg white.

On ocular examination, the best-corrected visual acuity was bilateral 20/20, and the intraocular pressure was 13/13 mmHg. A slit-lamp biomicroscopic examination revealed bilateral palpebral SCH and no signs of intraocular hemorrhage. A fundus image did not reveal any signs of bleeding.

Intravenous diphenhydramine hydrogen chloride was administered for a suspected anaphylaxis skin reaction to the vaccination. The hemorrhage was managed conservatively. The rash subsided after 3 days of medication and the hemorrhage had resolved at 2-weeks follow-up.

3. Discussion

After the first outbreak of H1N1 influenza A virus infection was reported in Mexico in 2009, the World Health Organization announced a worldwide pandemic of the novel influenza A H1N1 virus and recommended a pandemic action plan for each country.

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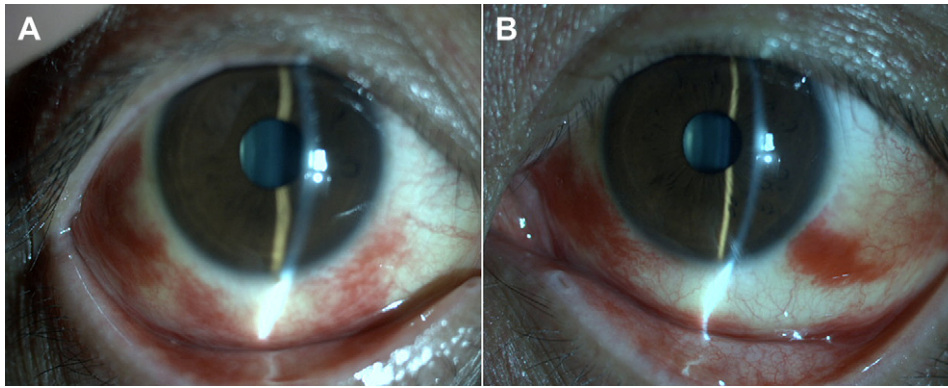


Fig. 1. Bilateral bulbar subconjunctival hemorrhage, which is flat, diffuse and upper-sparing distribution: (A) right eye; and (B) left eye.



Fig. 2. Anaphylactic skin manifestation over the lower face to anterior chest.

Following four clinical trials for immunogenicity and safety, each in a different country, the Taiwanese government initiated the production of a monovalent split-virus pandemic influenza A H1N1 vaccine (AdimFlu-S) in Taiwan.¹ In these clinical vaccine trials, the most commonly reported local adverse event was injection-site pain (24.4%). Redness of the eye was only reported in the first vaccination trial in Taiwan where 4.4% of the 183 participants were effected.^{2–4}

Mimura et al recently performed a study on risk factors for SCH; this study involved a large series of consecutive patients. SCH was most commonly observed to be caused by local trauma or contact-lens-induced injury in the younger group and by hypertension in the older group.⁵ The causative factor remained unknown, however, for more than 40% of patients with SCH.

To the best of our knowledge, this is the first reported case of bulbar SCH after vaccination. Our patient did not have any bleeding disorder, medication history or chronic disease. He also denied squeezing, cough, contact-lens wearing, trauma history, stress or any increased venous pressure situation before red eye occurred. Other precipitating causes were excluded in the case of our patient. Systemic screening during hospitalization did not reveal any abnormal finding. The lesions appeared soon after vaccination, so

they may have been caused by a bleeding disorder or an anaphylactic reaction to the vaccine.

Although SCHs are rarely caused by hematological factors, they may result from subclinical disseminated intravascular coagulation (DIC). For subclinical DIC, however, clinical evidence of bleeding is nonspecific and the laboratory screening tests usually yield normal results.⁶ There are isolated reports linking influenza vaccines with thrombocytopenia.^{7–9} The antibodies responsible for the clearance of viral antigen are naturally present on platelets.

Patients who present with SCH that has not been caused by trauma should be evaluated for metabolic diseases or coagulopathy. In most patient series, subclinical or florid DIC was the most commonly observed hematological abnormality. Our patient may have had the SCH because of an anaphylactic reaction related to subclinical DIC, but the SCH did not develop into a severe bleeding disorder, presumably as a result of early treatment.

This is the first report of SCH that developed associating with vaccination. Therefore, clinicians should be aware that influenza vaccination may be associated with ocular disorders.

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