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LETTER TO THE EDITOR

Acute infectious urticaria associated with human parvovirus B19 infection

Dear Editor,

A 24-year-old woman presented with a two-day history of fever and wheals. Physical examination demonstrated multiple wheals on her face, trunk, and extremities with severe itching (Figure 1A). Her body temperature was 38°C; however, she did not have any symptoms of upper respiratory tract infection. Two days after admission, she showed angioedema on her eyelid and lower lip (Figure 1B) and swelling of bilateral dorsal hands and feet (Figure 1C and D). The patient also had arthralgia on her wrists, ankles, and fingers. Laboratory data showed increased white blood cell count (15.1 × 10^3/μL; neutrophils 87%, eosinophils 0.2%) and C-reactive protein (16.3 mg/dL). Investigations for viral titers demonstrated increased IgM antibody against human parvovirus B19 (HPVB19) (7.01; normal: <0.80). There were no significant changes in titers suggestive of other infectious agents, such as cytomegalovirus (CMV), EB virus (EBV), herpes simplex virus (HSV), or *Mycoplasma pneumoniae*. Notably, the patient showed increased coagulation/fibrinolysis markers: FDP, 83 μg/mL (normal: <5 μg/mL); D-dimer, 46.8 μg/mL (normal: <0.1 μg/mL); and prothrombin fragment 1 + 2, 1,160 pmol/L (normal: 69–229 pmol/L). The patient was diagnosed with acute urticaria

FIGURE 1 Clinical Features of the Case. A, Multiple Wheals on the Thigh. B, Angioedema of the Lower Lip. C and D, Dorsal Hands and Feet Were Swollen with Wheals

induced by HPVB19 infection and treated with antihistamines. Clinical symptoms, including fever, wheals, arthralgia, and swelling of hands and feet, improved within 10 days.

Acute urticaria is defined as acute onset of urticarial lesions without apparent causes, which subsides within six weeks. In some cases, urticarial rash is triggered by infections, which is referred to as acute infectious urticaria.[1] Typical features of acute infectious urticaria are generalized wheals, fever, blood neutrophilia, and increased C-reactive protein.[2] In general, causative agents include bacteria (such as *M. pneumoniae*), EBV, CMV, HSV, human herpesvirus 6, and coxsackievirus A9.[3,4] HPVB19, although uncommon, also causes acute urticaria, and we are aware of four prior cases in the literature.[4,5] Detailed information on clinical and laboratory features of these patients was not provided. Our patient exhibited arthralgia and swelling of dorsal hands and feet. These clinical features may be symptoms preferentially but not exclusively suggestive of HPVB19-induced urticaria.

Notable findings were elevated markers of coagulation/fibrinolysis, namely, FDP, D-dimer, and prothrombin fragment 1 + 2. Several lines of evidence have indicated activation of coagulation in chronic spontaneous urticaria and hereditary angioedema.[6,7] Activation of coagulation seems to also occur in acute urticaria[8]; however, we are unaware of any prior cases with acute infectious urticaria and activated blood coagulation, in which the infectious cause was defined. Elevation of these markers is considered to be due to activation of the extrinsic coagulation pathway triggered by tissue factor expressed by eosinophils and/or lesional tissues.[9] However, a recent finding demonstrated significant cell surface expression of tissue factor on blood monocytes in hereditary angioedema.[6] Tissue factor on monocytes can be induced by various stimuli, including lipopolysaccharide and C-reactive protein.[10] Thus, in our case, C-reactive protein may have stimulated tissue factor expression on monocytes. Alternatively, viral infection might directly stimulate monocytes to express tissue factor, leading to thrombin synthesis and mast cell activation.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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