Short Communication

Varicella Infection Complicated by Marked Thrombocytopenia

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SUMMARY: We report a rare case of adult varicella complicated by marked thrombocytopenia. A 49-year-old woman presented with fever and rash for 3 days. Blood examination revealed marked thrombocytopenia ($2.7 \times 10^4/\mu\text{L}$). Varicella infection was diagnosed after elevated levels of varicella zoster virus IgM and IgG antibodies were observed 2 weeks later. In this case, thrombocytopenia was due to varicella infection, and the mechanism was estimated to be non-immunological. Because varicella infection complicated by thrombocytopenia may result in fatal bleeding, thrombocytopenia in patients with varicella warrants close attention.

Thrombocytopenia is reported as a complication of varicella infection; however, it is seldom observed in clinical practice. We report a rare case of adult varicella complicated by marked thrombocytopenia. The possible mechanism of this pathology is discussed.

A 49-year-old woman visited our emergency department with fever and rashes for 3 days. Rashes with red areolae were observed on the whole body. Blood examination revealed marked thrombocytopenia ($2.7 \times 10^4/\mu\text{L}$). She was admitted to our hospital for close observation and treatment. She had a history of rubella, but no history of varicella, epidemic parotitis, and measles. Her vaccination history was unknown. She took no medications, had no contact with an infected person, and did not live with children. She was a lecturer at a further education school. At admission, her consciousness was clear, body temperature was 36.7°C , blood pressure was 125/68 mmHg, pulse rate was 90 beats/min, and oxygen saturation was 98% in the room air. Physical examination did not reveal palpable lymph nodes on the neck, redness of the pharynx, swelling of the tonsils, and Koplik spots. Chest auscultation revealed no rales and murmur. The abdomen was soft, without distention, rebound tenderness, or guarding. She had no leg edema.

As shown in Table 1, blood examination revealed thrombocytopenia as well as elevated D-dimer and C-reactive protein (CRP) levels. Examination of viral markers and antibody levels of human immunodeficiency virus (HIV) revealed the following: varicella zoster virus (VZV) IgM 0.44 (negative), rubella IgM ≤ 0.35 (negative), VZV IgG 2.0 (negative), measles IgM 0.29 (negative), antibody to Epstein-Barr virus viral capsid antigen (anti-VCA IgM) 0.0 (negative), and antibody to HIV (negative). VZV IgM was negative; however, varicella infection was strongly suspected because of the

specific rashes. As shown in Figure 1, her platelet count gradually decreased after admission and reached the minimum level ($1.7 \times 10^4/\mu\text{L}$) on the 2nd day of admission. Bleeding symptoms were not observed. As a part of the rash was scabbing (Fig. 2), her platelet count recovered to $10.8 \times 10^4/\mu\text{L}$ on the 5th day of admission. Because her platelet count rapidly recovered, bone marrow aspiration was not performed. Varicella infection was diagnosed after elevated levels of VZV IgM and VZV IgG antibodies (5.18 [positive] and 35.7 [positive], respectively) were examined 2 weeks later.

Varicella infection is commonly accompanied by complications affecting the respiratory tract, skin, gastrointestinal tract, and nervous system as well as secondary bacterial infections. Thrombocytopenia, coagulopathy, leukopenia, and anemia are known hematological complications of varicella infection (1,2). According to Ozdemir et al. (2), thrombocytopenia under $15 \times 10^4/\mu\text{L}$ was observed in 7 out of 34 previously healthy pediatric patients, although precise data were not shown.

The etiology of thrombocytopenia complicated with a varicella infection can be classified as either immunological mechanism or non-immunological mechanism. The immunological mechanism is acute idiopathic thrombocytopenic purpura (ITP) developing after infection. According to Amir et al. (3), 10 out of 515 pediatric patients with ITP (1.9%) were diagnosed with post-varicella ITP. ITP was diagnosed at 8.5 days (on average) after the onset of a varicella rash. The ratio of female to male patients was 1:1.5, and the average minimal platelet count was $0.95 \times 10^4/\mu\text{L}$. Bleeding episodes occurred in 3 patients.

On the other hand, the non-immunological form of varicella-associated thrombocytopenia is presumed to develop after viral infection without the accompanying production of antibodies to platelets. In this situation, thrombocytopenia is considered to be caused by decreased platelet production in the bone marrow (4).

In the present case, thrombocytopenia rapidly resolved without administration of corticosteroids or immunoglobulins, and her platelet-associated IgG levels ($89 \text{ ng}/10^7 \text{ cells}$) were only slightly elevated. Thus, it is

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Table 1. Laboratory data on admission

Variable	Value	Variable	Value	Variable	Value
Leukocyte	3300/ μ L	Total protein	6.9 g/dL	VZV IgM	0.44 (–)
Neutrophil	56%	Albumin	3.7 g/dL	VZV IgG	≤ 2.0 (–)
Lymphocyte	27%	Total bilirubin	0.5 mg/dL	Rubella IgM	0.35 (–)
Monocyte	6%	AST	25 IU/L	Rubella IgG	48.5 (+)
Basophil	2%	ALT	22 IU/L	Measles IgM	0.29 (–)
Atypical lym	8%	LDH	320 IU/L	Measles IgG	8 (–)
Erythrocyte	$4.62 \times 10^6/\mu$ L	ALP	138 IU/L	Anti-VCA IgM	0.0 (–)
Hemoglobin	14.4 g/dL	BUN	17.7 mg/dL	Anti-VCA IgG	0.4 (–)
Hematocrit	40.9%	Creatinine	0.54 mg/dL	Anti-EBNA	
				IgG	0.3 (–)
Platelet	$2.7 \times 10^4/\mu$ L	Amylase	38 IU/L	Anti-EA IgG	0.8 ($\pm$)
PT INR	12.2 s	Creatine kinase	58 IU/L	HIV antibody	(–)
APTT	37.3 s	Na	134 mEq/L		
Fibrinogen	284 mg/dL	Cl	98 mEq/L		
D-dimer	6 μ g/mL	K	3.8 mEq/L		
		Ca	8.6 mg/dL		
		CRP	2.5 mg/dL		
		Blood sugar	122 mg/dL		
		PA IgG	89 ng/ 10^7 cells		

PT INR, prothrombin time-international normalized ratio; APTT, activated partial thromboplastin time; AST, aspartate aminotransferase; ALT, alanine aminotransferase; LDH, lactate dehydrogenase; ALP, alkaline phosphatase; BUN, blood urea nitrogen; EBNA, Epstein-Barr nuclear antigen; EA, early antigen.

Fig. 1. (Color online) Clinical course after admission.

Fig. 2. (Color online) A photograph of her face on the 5th day of admission.

unlikely that thrombocytopenia was attributable to ITP and the mechanism was estimated to be non-immunological.

Most cases of varicella infection develop in infancy, and reports of adult varicella infection with marked thrombocytopenia ($1.7 \times 10^4/\mu\text{L}$) are sparse. However, Marcus et al. (5) reported a fatal case of intracranial bleeding due to thrombocytopenia complicated with varicella infection. Because of the risk of fatal bleeding, cases of thrombocytopenia in patients with varicella infection warrant close attention.

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Conflict of interest None to declare.

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