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Idiopathic Thrombocytopenic Purpura and the Moderna Covid-19 Vaccine

To the Editor:

Recently, it was reported that a physician developed petechiae 3 days after receiving the Pfizer-BioNTech Covid-19 vaccine, was diagnosed with idiopathic thrombocytopenic purpura, and ultimately died of a cerebral hemorrhage.[1] Here, we report a case of idiopathic thrombocytopenic purpura in a 72-year-old woman 1 day after receiving the first dose of the Moderna COVID-19 vaccine.

The day after receiving her vaccination, the patient woke up with a rash, spontaneous oral bleeding, and headache. She denied any history of easy bruising or abnormal bleeding. Her medical history included gout, type 2 diabetes mellitus, and seasonal contact dermatitis. She denied any new medications or changes to her allopurinol and sitagliptin within the last 5 years. She denied any family history of autoimmune disorders.

On examination, she had diffuse petechiae across her arms, legs, and abdomen and hemorrhagic bullae of the gingival mucosa. Laboratory tests were notable for an initial platelet count of 12,000/μL, decreasing to 1,000/μL within 12 hours of arrival. Other laboratory tests are as shown in Table 1. Of note, normal prothrombin time, activated partial-thromboplastin time, d-dimer, and fibrinogen ruled out disseminated intravascular coagulation. Further, normal hemoglobin, haptoglobin, lactate dehydrogenase, and peripheral smear without schistocytes were inconsistent with hemolytic uremic syndrome or thrombotic thrombocytopenic purpura. Viral studies, including hepatitis A, B, and C, Epstein-Barr virus, HIV, cytomegalovirus, influenza A and B, and SARS-CoV-2, revealed no evidence of current or prior infection. Parvovirus IgG but not IgM antibodies were present, indicating prior resolved infection. Antinuclear antibody titers were undetectable, making rheumatic etiology less likely.

The patient received an initial 40-mg intravenous dose of dexamethasone and additional doses of 20 mg/day for 3 days thereafter. Intravenous immunoglobulin, aminocaproic acid, and rituximab were administered, and she received multiple platelet transfusions. However, her platelets continued to fluctuate between 1,000/μL and 40,000/μL. Non-contrast computed tomography of the head was without evidence of intracranial bleeding. Her course was complicated by multiple episodes of melena.

Idiopathic thrombocytopenic purpura postvaccination has been reported in the measles, mumps, and rubella vaccine[2] and has been associated with the use of attenuated vaccines and vaccine adjuvants, with one review identifying 45% of drug-induced idiopathic thrombocytopenic

Table 1. Clinical laboratory results.

Measure	Reference Range	Hospital Day 1	Hospital Day 3	Hospital Day 5	Hospital Day 8
Hemoglobin (g/dL)	12.0–16.0	13.3	12.2	10.8*	11.1*
Hematocrit (%)	37.0–47.0	41.2	36.3*	33.9*	34.5*
Platelet count (per μL)	150,000–400,000	12,000*	9,000*	11,000*	1,000*
White-cell count (per μL)	4,800–10,800	5,320	5,360	3,020*	3,300*
Mean corpuscular volume (fL)	80.0–99.0	92.6	90.5	92.6	92.5
Mean corpuscular hemoglobin (pg)	27.0–31.0	29.9	30.4	29.5	29.8
Mean corpuscular hemoglobin concentration (g/dL)	29.8–35.2	32.3	33.6	31.9	32.2
Red-cell distribution width (%)	12.0–15.0	12.3	12.3	12.0	12.0
Differential count (per μL)					
Neutrophils	2,100–7,600	3,510	3,630	1600*	2,350
Lymphocytes	1,000–4,900	1,260	1,160	980*	580*
Monocytes	100–1,100	410	480	350	290
Eosinophils	100–400	110	60*	50*	80*
Basophils	0–200	2	1	2	1
Sodium (mmol/L)	136–145	140	141	138	137
Potassium (mmol/L)	3.5–5.1	3.7	4.1	3.9	3.8
Chloride (mmol/L)	98–108	100	104	104	101
Carbon dioxide (mmol/L)	22–29	26	25	28	28
Urea nitrogen (mg/dL)	6.0–23.0	14	19	21	16

Table 1. Continued.

Measure	Reference Range	Hospital Day 1	Hospital Day 3	Hospital Day 5	Hospital Day 8
Creatinine (mg/dL)	0.50–1.20	0.76	0.68	0.73	0.76
Glucose (mg/dL)	74–110	103	105	102	112*
Calcium (mg/dL)	8.6–10.3	9.3	9.1	8.9	9
Total protein (g/dL)	6.6–8.7	7.2	6.4*	—	8.2
Albumin (g/dL)	3.5–5.2	4.6	4.0	—	3.7
Aspartate aminotransferase (U/L)	5–32	21	16	—	18
Alanine aminotransferase (U/L)	0–33	13	10	—	12
Alkaline phosphatase (U/L)	35–104	98	82	—	73
Total bilirubin (mg/dL)	0.0–1.2	2.8†	2.1†	—	1.9†
Direct bilirubin (mg/dL)	0.0–0.3	0.4	0.3	—	0.3
Magnesium (mg/dL)	1.6–2.6	2.1	2.1	—	2.1
Phosphorus (mg/dL)	2.5–4.5	3.4	2.6	3.9	2.8
Prothrombin time (seconds)	10.0–13.0	11.8	—	—	—
International normalized ratio		1	—	—	—
Activated partial-thromboplastin time (seconds)	25.1–36.5	31.7	—	—	—
Fibrinogen (mg/dL)	200–393	359	—	—	—
D-dimer (ng/mL DDU)	0–243	216	—	—	—
Iron (ng/μL)	37–145	45	—	—	—
Unsaturated iron-binding capacity (ng/μL)	112.0–347.0	275.5	—	—	—
Total iron-binding capacity (ng/μL)	220–430	320	—	—	—
Haptoglobin (mg/dL)	34–200	106	—	—	—
Central venous oxygen saturation (%)	60.0–85.0	78.9	—	—	—
Ionized calcium (mmol/L)	1.16–1.32	1.22	—	—	—
Lactic acid (mmol/L)	0.6–1.4	1.5†	—	—	—
Thyroid stimulating hormone (mIU/L)	0.27–4.20	1.29	—	—	—
Vitamin B12 (pg/mL)	211–946	299	—	—	—
SARS-CoV-2 RNA	NA	Not detected	—	—	—
SARS-CoV-2 antibody index	<0.99	0.08	—	—	—
Influenza A RNA	NA	Not detected	—	—	—
Influenza B RNA	NA	Not detected	—	—	—
Hepatitis A IgM antibodies	NA	Non-reactive	—	—	—
Hepatitis B surface antibody	NA	Reactive	—	—	—
Hepatitis B surface antigen	NA	Non-reactive	—	—	—
Hepatitis B core IgM antibody	NA	Non-reactive	—	—	—
Hepatitis C RNA	NA	Not detected	—	—	—
HIV 1,2 antigen and antibody assay	NA	Non-reactive	—	—	—
Cytomegalovirus PCR	NA	Not detected	—	—	—
Epstein-Barr virus PCR	NA	Not detected	—	—	—
Parvovirus B19 IgM antibodies	NA	Negative	—	—	—
Parvovirus B19 IgG antibodies	NA	Positive	—	—	—
H. pylori stool antigen	NA	Not detected	—	—	—
Antinuclear antibody	NA	Negative	—	—	—

NA, not applicable; *PCR*, polymerase chain reaction.
*The value in this patient was below normal.
†The value in this patient was above normal.

purpura occurring postvaccination.[3] While hypersensitivity reactions are a known adverse event related to mRNA COVID-19 vaccines,[4] this is, to our knowledge, the second known case of acute idiopathic thrombocytopenic purpura following administration.Acknowledgments

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IMAGES IN EMERGENCY MEDICINE

(continued from p. 649)

DIAGNOSIS:

Traumatic lens dislocation. Lens dislocation is an ocular emergency that most commonly results from trauma but may also present in patients with Ehlers-Danlos syndrome, homocystinuria, Marfan syndrome, and Weill-Marchesani syndrome.[1-3] Prompt identification is of utmost importance because anterior lens dislocations typically require urgent surgery to prevent complications such as acute angle glaucoma.[4] Although noncontrast computed tomography is an appropriate diagnostic modality, point-of-care ultrasonography may be a more efficient and rapid method.[5]

Ophthalmology examined the patient and offered emergency same-day surgery; however, he declined and elected to follow up as an outpatient.

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