Immune Thrombocytopenia Following the Pfizer-BioNTech BNT162b2 mRNA COVID-19 Vaccine

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KEY WORDS: coronavirus disease-2019 (COVID-19), immune thrombocytopenia (ITP), Pfizer-BioNTech BNT162b2 mRNA COVID-19 vaccine

IMAJ 2021; 23: 341–341

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On 11 December 2020, the U.S. Food and Drug Administration issued the first emergency use authorization for the Pfizer-BioNTech BNT162b2 mRNA COVID-19 vaccine [1]. Since then, more than 40 million doses have been administered globally. To date, no major side effects have been reported [2].

PATIENT DESCRIPTION

A 53-year-old male was admitted to the Shaare Zedek Medical Center in Jerusalem due to epistaxis and low platelet count 2 weeks after receiving the first dose of the Pfizer-BioNTech COVID-19 vaccine. Past medical history was notable for morbid obesity, diabetes, and hypertension for which he was treated with lercanidipine, losartan, doxazocin, hydrochlorothiazide and aspirin. He took two tablets of levofloxacin, which he had previously taken on numerous occasions for suspected otitis one week prior to admission.

Physical examination revealed wet purpura on his palate and petechial and purpuric rash on the trunk and limbs. There was no lymphadenopathy or hepatosplenomegaly. His blood count and smear were remarkable for severe thrombocytopenia: $1\times10^3/\mu l$ (normal range $150–400\times10^3/\mu l$). Kidney and liver functions as well as prothrombin time / partial thromboplastin time tests were normal.

Immune thrombocytopenic purpura (ITP) was diagnosed. Cytomegalovirus, Epstein-Barr virus, and hepatitis B serology were consistent with past infection. Hepatitis C and human immunodeficiency virus serology were negative. Mycoplasma antibody titer was borderline-positive (1:80). Anti-nuclear antibodies, complement, anti-cardiolipin, and anti ß2-glycoprotein were all negative.

The patient was treated with dexamethasone 20 mg/d and intravenous immunoglobulins, 1 g/kg, with a gradual increase in platelets. Five days later his platelet count normalized.

COMMENT

Whether ITP was triggered by a drug (levofloxaxin) or the COVID-19 vaccine is not clear. Levofloxacin has been associated with severe thrombocytopenia [3], but was considered unlikely due to extensive prior exposure. Previous reports have suggested possible association between ITP and vaccination, most frequently following measles-mumps-rubella vaccination in young children [4]. Recently, a physician in Florida died several weeks after receiving the Pfizer-BioNTech vaccine due to refractory ITP and hemorrhagic stroke [5]. Although direct association is unclear, the U.S. Centers for Disease Control and Prevention investigated the case.

Our case of a life-threatening situation is, to the best of our knowledge, the second event of ITP that may have a temporal relationship with administration of the Pfizer-BioNTech COVID-19 vaccine. Due to the severity of thrombocytopenia in our patient the second dose of the vaccine was not given.

CONCLUSIONS

Although the role of mass vaccination is pivotal to ending the pandemic, it remains uncertain whether patients previously diagnosed with ITP or those with suspected vaccine-induced ITP should be routinely vaccinated.

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