Received: 9 July 2021 | Revised: 15 July 2021 | Accepted: 18 July 2021

DOI: 10.1002/pbc.29271

Pediatric Blood & Cancer

SOCIÉTÉ INTERNATIONALE D'ONCOLOGIE PÉDIATRIQUE INTERNATIONAL SOCIETY OF PAEDIATRIC ONCOLOGY

aspho The American Society of Pediatric Hematology/Oncology

WILEY

LETTER TO THE EDITOR

Thrombocytopenia in a teen with sickle cell disease following COVID-19 vaccination

To the Editor:

A 14-year-old male with homozygous sickle cell disease (SCD), chronically prescribed hydroxyurea and voxelotor, with variable adherence, presented with bilateral anterior hip and back pain that began 3 days earlier. He had unsuccessfully been treating symptoms at home with ibuprofen and oxycodone. This was his first vaso-occlusive event (VOE). He had a history of two hospitalizations for acute chest syndrome (ACS). His review of systems was negative other than pain. He denied history of fever, upper respiratory symptoms, or gastrointestinal symptoms. He had no known ill contacts.

Following extension of the FDA emergency use authorization for the Pfizer-BioNTech COVID-19 vaccination to include adolescents 12–15 years of age, he received his first dose of the Pfizer COVID-19 vaccine 23 days prior to presentation. The COVID-19 vaccine is specifically recommended for persons with SCD due to higher morbidity and mortality associated with SARS-CoV-2 infection, including higher hospitalization rates and increased risk of VOE and ACS. Additionally, underlying SCD-related cardiopulmonary comorbidities predispose to poor outcomes associated with SARS-CoV-2 infection.[1]

He was afebrile with respiratory rate, blood pressure, and heart rate that were appropriate for age. His lungs were clear to auscultation and his oxygen saturation was 95% on room air. The patient had no jaundice or scleral icterus. His spleen was nonpalpable. Initial complete blood count was significant for elevated white blood cell count of 16,000/μl (baseline 10,000/μl), hemoglobin 6.3 g/dl (baseline 7.5 g/dl), and platelet count 60,000/μl (baseline 500,000/μl). His absolute neutrophil count was 68,900/μl and MCV 88 fl. SARS CoV-2 PCR was negative.

He was admitted to the hospital for 4 days for management of VOE. Labs were trended closely due to concern that thrombocytopenia was secondary to splenic sequestration. However, abdominal ultrasound revealed a diffusely echogenic and atrophied spleen measuring 5.3 cm in length, which was reassuring. Over the course of hospitalization, the pain rapidly improved with opiates and anti-inflammatory medications. His platelet course is shown in Figure 1. Notably, 4 days post discharge his platelet count was 940,000/μl.

Although we cannot state with certainty that this patient's VOE and thrombocytopenia were related to the Pfizer-BioNTech COVID-19 vaccine, it is highly suspicious. Thrombocytopenia following the Johnson & Johnson and Moderna vaccines have been reported following less than one in a million doses and described in persons 22–82 years of age.[2] Thrombocytopenia has been noted after a median of 13 days, with a range of 1–23 days, following the vaccination. The teen presented here is the first child with SCD reported to develop VOE and thrombocytopenia after the Pfizer-Bio COVID-19 vaccine. It is important for hematology providers to consider the benefits but also recognize potential rare side effects of COVID-19 vaccines, especially to high-risk patients. This case adds to the developing body of knowledge regarding the COVID-19 vaccination in the pediatric, specifically SCD, population.

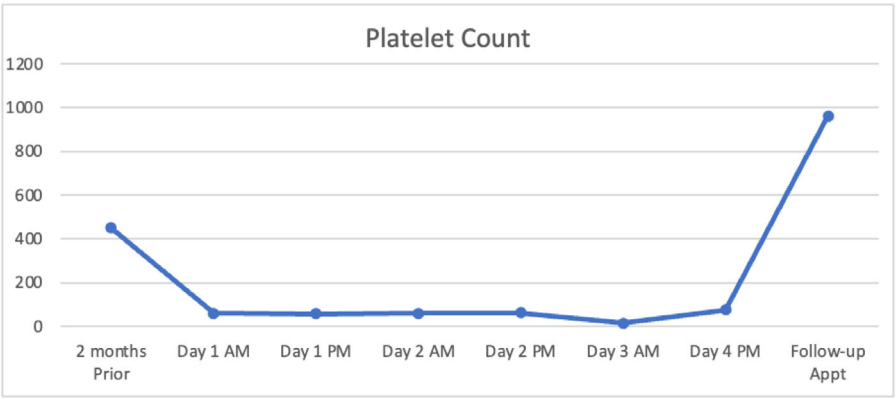

FIGURE 1 Graph depicts the platelet count trend for the patient before, during, and after hospitalization

CONFLICT OF INTEREST

The authors declare that there is no conflict ofinterest.

M. Jane Underdown
Rachelle Nuss

Center for Cancer and Blood Disorders, Department of Pediatrics, Children's Hospital of Colorado and University of Colorado, Aurora, Colorado, USA

Correspondence
M. Jane Underdown, Center for Cancer and Blood Disorders, Department of Pediatrics, Children's Hospital of Colorado and University of Colorado, 13123 E 16th Ave, Aurora, CO 80045, USA.
Email: mary.underdown@childrenscolorado.org

ORCID

M. Jane Underdown https://orcid.org/0000-0001-7370-5683
Rachelle Nuss https://orcid.org/0000-0001-8756-1967

REFERENCES

1. Minniti CP, Zaidi AU, Nouraie M, et al. Clinical predictors of poor outcomes in patients with sickle cell disease and COVID-19 infection. *Blood Adv*. 2021;5(1):207-215.
2. Welsh KJ, Baumblatt J, Chege W, Goud R, Nair N. Thrombocytopenia including immune thrombocytopenia after receipt of mRNA COVID-19 vaccines reported to the Vaccine Adverse Event Reporting System (VAERS). *Vaccine*. 2021;39(25):3329-3332. https://doi.org/10.1016/j.vaccine.2021.04.054