ORIGINAL ARTICLES



Myopericarditis after messenger RNA Coronavirus Disease 2019 Vaccination in Adolescents 12 to 18 Years of Age

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Objectives To characterize the clinical course and outcomes of children 12-18 years of age who developed probable myopericarditis after vaccination with the Pfizer-BioNTech (BNT162b2) coronavirus disease 2019 (COVID-19) messenger RNA (mRNA) vaccine.

Study design A cross-sectional study of 25 children, aged 12-18 years, diagnosed with probable myopericarditis after COVID-19 mRNA vaccination as per the Centers for Disease Control and Prevention criteria for myopericarditis at 8 US centers between May 10, 2021, and June 20, 2021. We retrospectively collected the following data: demographics, severe acute respiratory syndrome coronavirus 2 virus detection or serologic testing, clinical manifestations, laboratory test results, imaging study results, treatment, and time to resolutions of symptoms.

Results Most (88%) cases followed the second dose of vaccine, and chest pain (100%) was the most common presenting symptom. Patients came to medical attention a median of 2 days (range, <1-20 days) after receipt of Pfizer mRNA COVID-19 vaccination. All adolescents had an elevated plasma troponin concentration. Echocardiographic abnormalities were infrequent, and 92% showed normal cardiac function at presentation. However, cardiac magnetic resonance imaging, obtained in 16 patients (64%), revealed that 15 (94%) had late gadolinium enhancement consistent with myopericarditis. Most were treated with ibuprofen or an equivalent nonsteroidal anti-inflammatory drug for symptomatic relief. One patient was given a corticosteroid orally after the initial administration of ibuprofen or an nonsteroidal anti-inflammatory drug; 2 patients also received intravenous immune globulin. Symptom resolution was observed within 7 days in all patients.

Conclusions Our data suggest that symptoms owing to myopericarditis after the mRNA COVID-19 vaccination tend to be mild and transient. Approximately two-thirds of patients underwent cardiac magnetic resonance imaging, which revealed evidence of myocardial inflammation despite a lack of echocardiographic abnormalities. (*J Pediatr 2021;238:26-32*).

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he US Food and Drug Administration issued an Emergency Use Authorization on December 11, 2020, for the Pfizer-BioNTech messenger RNA (mRNA) coronavirus disease 2019 (COVID-19) vaccine (BNT162b2, Pfizer-BionTech, Pfizer Inc) in individuals 16 years of age and older. On May 10, 2021, the US Food and Drug Administration expanded the Emergency Use Authorization of the same vaccine to children 12-15 years of age. The Centers for Disease Control and Prevention (CDC) subsequently recommended the COVID-

19 vaccine for children 12 years and older via a notification issued on May 12, 2021. As of June 26, 2021, 322 million doses of various COVID-19 vaccines have been administered, of which 4 521 732 children aged 12-15 years (5% of the US population) and 3 213 339 adolescents aged 16 and 17 years (2.5% of the US

CDC Centers for Disease Control and Prevention
CMR Cardiac magnetic resonance imaging

COVID-19 Coronavirus disease 2019 IgG Immunoglobulin G mRNA Messenger RNA

NSAID Nonsteroidal anti-inflammatory drug

SARS-CoV-2 severe acute respiratory syndrome coronavirus 2

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