

## Important Insights into Myopericarditis after the Pfizer mRNA COVID-19 Vaccination in Adolescents



**D**as et al<sup>1</sup> report 25 cases of myopericarditis in adolescents 12-17 years of age after the receipt of the Pfizer messenger RNA (mRNA) coronavirus disease 2019 (COVID-19) vaccine as collected from 8 institutions. Schauer et al<sup>2</sup> report 13 cases of myopericarditis in adolescents 12-17 years of age after receipt of the Pfizer vaccine and diagnosed at Seattle Children's Hospital. These reports add substantial weight to the uniqueness of these events and their association with vaccination. Of the 38 cases described in these 2 reports, 93% occurred after the second dose, 90% occurred in males, and one-half occurred in those 12-15 years of age for whom the recommendation had only been in place for weeks. The tight timing of onset after vaccination (median, 2-3 days), as well as the clinical presentation with chest pain in all patients and the subsequent clinical courses mirroring each report and other cases described to date, are remarkable. The generally mild clinical symptoms (3 patients in the multisite study being managed as outpatients) and their rapid resolution (median hospital stay, 2-3 days) undoubtedly do not reflect the full spectrum of severity, but nonetheless are reassuring.

Schauer et al<sup>2</sup> were able to obtain data from the state of Washington on the total number of adolescents 12-17 years of age who received their second dose of vaccine (including 98 000 male and female adolescents 12-15 years of age), permitting them to calculate a minimum incidence of myopericarditis that is substantially higher than has been estimated by national reporting systems and in older adolescents. The reports contribute nucleocapsid antibody testing results in 24 of 38 patients at the time of presentation with myopericarditis; only 4 tests were positive (indicating prior severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2] infection). Testing for antibody to spike protein, on the other hand, performed in 8 patients<sup>1</sup> was positive in all, indicating an immunologic response to the first vaccination.

Minocha et al<sup>3</sup> provide further thought-provoking information. They report mild transient myopericarditis after the second dose of the Pfizer mRNA COVID-19 vaccine in

a 17-year-old boy who had had "traditional" myocarditis (no etiology determined) 3 months before his second dose of the mRNA vaccine, shortly after which he had a recurrence of myocarditis. SARS-CoV-2 testing by PCR and antibody were negative on both occasions. Among the 38 cases from the other 2 studies, 2 patients had a family history of myocarditis.<sup>1</sup> One patient who had mild transient myopericarditis 20 days after his first dose of vaccine had myopericarditis again 1 day after his second dose. Nucleocapsid antibody positivity at the time of this second presentation indicated prior SARS-CoV-2 infection, which may shed light on the unusual occurrence of myopericarditis after a first dose of vaccine.<sup>2</sup> A final thought-provoking fact is that the 19 patients 12-15 years of age with mRNA vaccine-associated myopericarditis<sup>1,2</sup> were early adopters; 18 of them had already received their second dose of vaccine within 6 weeks of the CDC recommendation to extend vaccination to this age group. Does this fact provide potential insight into an increased risk related to 1 or more factors such as genetics, dosing interval, or other factors that are linked with early adoptive behavior?

These reports highlight how careful observation, investigation, and reporting of new events can broaden not only the knowledge of clinicians but also engage a wider audience to consider their pathophysiology and potential mitigation. ■

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### References

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3. Minocha PK, Better D, Singh RK, Hoque T. Recurrence of acute myocarditis temporally associated with receipt of the mRNA Coronavirus Disease 2019 (COVID-19) vaccine in a male adolescent. *J Pediatr* 2021;238:321-3.

mRNA Messenger RNA  
SARA-CoV-2 Severe acute respiratory syndrome coronavirus 2

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