Myocarditis Tied to COVID-19 Shots More Common Than Reported?

Megan Brooks

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While cases of pericarditis or myocarditis temporally linked to COVID-19 vaccination remain rare, they may happen more often than reported, according to a large review of electronic medical records (EMR).

They also appear to represent two "distinct syndromes," George Diaz, MD, Providence Regional Medical Center Everett, Everett, Washington, told *theheart.org | Medscape Cardiology.*

Myocarditis typically occurs soon after vaccination in younger patients and mostly after the second dose, while pericarditis occurs later in older patients, after either the first or second dose.

Diaz and colleagues report their analysis in a research letter published online August 4 in *JAMA.*

They reviewed the records of 2,000,287 people who received at least one COVID-19 vaccination at 40 hospitals in Washington, Oregon, Montana, and California that are part of the Providence healthcare system and use the same EMR.

The median age of the cohort was 57 years and 59% were women.

A little more than three quarters (77%) received more than one dose; most received the mRNA vaccines made by Pfizer (53%) and Moderna (44%); only 3% received the Johnson & Johnson vaccine.

The records showed that 20 people had vaccine-related myocarditis (1.0 per 100,000) and 37 had pericarditis (1.8 per 100,000).

A recent report, based on data from the Centers for Disease Control and Prevention (CDC) Vaccine Adverse Events Reporting System (VAERS), suggested an incidence of myocarditis of about 4.8 cases per 1 million following receipt of mRNA COVID-19 vaccine.

The new study shows a "similar pattern, although at higher incidence, suggesting vaccine adverse event under-reporting. Additionally, pericarditis may be more common than myocarditis among older patients," the study team writes.

"Our study resulted in higher numbers of cases probably because we searched the EMR, and VAERS requires doctors to report suspected cases voluntarily," Diaz told *theheart.org | Medscape Cardiology.*

Also, in the governments' statistics, pericarditis and myocarditis were "lumped together," he noted.

Myocarditis Cases

The 20 myocarditis cases occurred a median of 3.5 days after vaccination (11 after the Moderna vaccine and 9 after the Pfizer vaccine), 15 (75%) were men, and the median age was 36 years.

Four individuals (20%) developed myocarditis symptoms after the first vaccination and 16 (80%) after the second dose. Nineteen of the patients (95%) were admitted to the hospital and all were discharged after a median of 2 days.

None of the 20 patients were readmitted or died. Two received a second vaccination after onset of myocarditis; neither had worsening of symptoms. At last available follow-up (median, 23.5 days after symptom onset), 13 patients (65%) had a resolution of their myocarditis symptoms and seven (35%) were improving.

Pericarditis Cases

The 37 pericarditis cases occurred a median of 20 days after the most recent COVID-19 vaccination: 23 (62%) with Pfizer, 12 (32%) with Moderna, and 2 (5%) with the J&J vaccine. Fifteen developed pericarditis after the first vaccine dose (41%) and 22 (59%) after the second.

Twenty-seven (73%) of the cases occurred in men; the median age was 59 years.

Thirteen (35%) patients were admitted to the hospital, none to intensive care. The median hospital stay was 1 day. Seven patients with pericarditis received a second vaccination. No patient died.

At last available follow-up (median, 28 days), seven patients (19%) had resolved symptoms and 23 (62%) were improving.

The researchers also calculate that the average monthly number of cases of myocarditis or myopericarditis during the prevaccine period of January 2019 through January 2021 was 16.9 (95% CI, 15.3 - 18.6) compared with 27.3 (95% CI, 22.4 - 32.9) during the vaccine period of February through May 2021 (P < .001).

The mean numbers of pericarditis cases during the same periods were 49.1 (95% CI, 46.4 - 51.9) and 78.8 (95% CI, 70.3 - 87.9), respectively (P < .001).

The authors say limitations of their analysis include potential missed cases outside care settings and missed diagnoses of myocarditis or pericarditis, which would underestimate the incidence, as well as inaccurate EMR vaccination information.

"Temporal association does not prove causation, although the short span between vaccination and myocarditis onset and the elevated incidence of myocarditis and pericarditis in the study hospitals lend support to a possible relationship," they write.

In late June, the US Food and Drug Administration added a warning to the fact sheets accompanying the Pfizer and Moderna mRNA COVID-19 vaccines flagging the rare risk of heart inflammation after their use.

Diaz cautioned that myocarditis and pericarditis events remain "a rare occurrence" after COVID-19 vaccination.

"When discussing vaccination with patients, [healthcare providers] can advise them that patients generally recover in the rare event they get pericarditis or myocarditis and no deaths were found, and that the vaccines are safe and effective," Diaz said.

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