Eosinophilic Myocarditis Following Coronavirus Disease 2019 (COVID-19) Vaccination

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A 53-year-old man presented with fever, dyspnea, and chest pain 2 days after receiving the second dose of the BNT162b2 vaccine (Pfizer-BioNTech) against coronavirus disease 2019 (COVID-19). At 5 days post vaccination, he was transferred to the emergency department because of worsening chest pain and dyspnea. Serology and a serum polymerase chain reaction assay excluded viral presence, including severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Clinical findings included high levels of serum C-reactive protein (peak level, 117 mg/L; normal levels <0.3 mg/dL), serum high-sensitivity troponin I (peak level, 988 ng/L; normal levels <12 ng/L), and eosinophils (peak level, 3.07 × 10^9/L; normal levels, <3.0 × 10^8/L). Echocardiography showed mild left ventricular hypokinesis and pericardial effusion. Coronary angiography revealed no significant stenosis. T2-weighted cardiac magnetic resonance imaging showed high signal intensity, indicating myocardial edema and inflammation of the mid-ventricular septum and apex (Figure A). Late gadolinium enhancement was identified within the same region (Figure B). Interventricular septal biopsies obtained from the right ventricle revealed diffuse eosinophilic infiltration of the myocardial interstitium (Figure C). Eosinophilic infiltration, as well as eosinophil degranulation between the myocardial fibers, was observed (Figure D). The patient’s dyspnea and chest pain improved without treatment within a few days of admission, while his fever decreased 10 days after onset.

Myocarditis following COVID-19 vaccination in patients aged over 50 is very rare, and eosinophilic myocarditis following COVID-19 vaccination identified by biopsy has not been reported. We concluded that this case was COVID-19 vaccination-related eosinophilic myocarditis in the absence of other causes.

Disclosures
The authors declare there are no conflicts of interest.

Reference
1. Bozkurt B, Kamat I, Hotez PJ. Myocarditis with COVID-19 mRNA vaccines. Circulation 2021; 144: 471–484.