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It seems that the far more appropriate question about the role of emergency clinicians is not whether we should treat opioid use disorder but how we can best develop systems and programs that deliver evidence-based care for our patients with opioid use disorder. Why should we even be discussing whether we should try our best to treat a life-threatening illness? For those emergency clinicians accepting of the moral, ethical, and legal rationale for treating addiction in the ED but unsure of how to adopt the initiation of buprenorphine in the ED with regard to ongoing treatment into their practice, we encourage you to review the Emergency Department Initiated Buprenorphine for Opioid Use Disorder (EMBED) resources to streamline this unfamiliar process into a simple, automated workflow and access online resources available on the American College of Emergency Physicians Emergency Quality Network Opioid Initiative website, including webinars, protocols, and applications, to support initiating buprenorphine in the ED.<sup>6</sup>

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## Acute ST-Segment Elevation Myocardial Infarction After ChAdOx1 nCoV-19 Vaccination in a 33-Year-Old Man



*To the Editor:*

Vaccines for coronavirus are effective against COVID-19, caused by SARS-CoV-2. However, a very rare but devastating complication of thrombocytopenia and thromboses at unusual sites emerged and was termed “vaccine-associated immune thrombosis and thrombocytopenia” or “thrombosis with thrombocytopenia syndrome.”<sup>1,2</sup> The cerebral venous sinus, pulmonary artery, splanchnic veins, and veins and arteries in the legs are the most commonly involved, while the coronary artery constitutes a minor part (4%).<sup>1</sup>

A 33-year-old man with an unremarkable medical history apart from obesity and mild hyperlipidemia (body mass index 34.6 kg/m<sup>2</sup>, cholesterol 204 mg/dL, triglycerides 138 mg/dL, low-density lipoprotein 142 mg/dL on the index day) presented to our emergency department after 1 day of crescendo chest pain. On arrival, ECG showed ST-segment elevation in leads II, III, and aVF, with reciprocal changes in leads I and aVL. Under the impression of acute STEMI, he was sent to the catheterization laboratory. Coronary arteriography revealed 83% stenosis with a heavy thrombus burden in the middle segment of the left circumflex artery. After repeated aspiration thrombectomy and the administration of tirofiban, TIMI-2 flow was obtained.

The initial laboratory results were later available and showed unpredicted thrombocytopenia ( $57 \times 10^3/\mu\text{L}$ ). A history of receiving his first dose of ChAdOx1 nCoV-19 vaccine 9 days before symptom onset was obtained. Additional blood tests showed highly elevated D-dimer ( $>10,000$  ng/mL, FEU) and decreased fibrinogen (227.9 mg/dL) levels. Positive antiplatelet factor 4 antibodies (75.98 ng/mL, optical density value of 0.698) were confirmed later. Whole-body imaging studies with CT/MRI/MRA were done and disclosed multiple thrombi at the straight, left transverse cerebral venous sinuses down to the left internal jugular veins, subsegmental pulmonary arteries, descending aorta, and hepatic veins. Tiny ischemic infarcts in the right centrum semiovale and temporal cortex and segmental infarctions in the spleen were also found. His clinical course was very complicated, and his persistent

thrombocytopenia, decreased fibrinogen level, and very high D-dimer level were refractory to treatment with intravenous immunoglobulin, methylprednisolone, a direct oral anticoagulant, and cryoprecipitate. A severe headache happened on day 7 of hospitalization. An emergency decompressive craniotomy was undertaken for an intracerebral hemorrhage in his left cerebrum, followed by a retrograde thrombectomy of his intracranial venous sinuses on the next day. His cardiac troponin level was elevated again on day 9. A total occlusion of the left circumflex artery at the ostium and heavy thrombi in the right coronary artery were disclosed and treated. Although his platelet count and fibrinogen and D-dimer levels began to improve with plasma exchanges, his condition deteriorated, he had multiple organ failures, and he succumbed on day 14 of hospitalization.

Thrombocytopenia is seldom found in patients with acute myocardial infarction. In a review of a US national database, the incidence was 3.3%, with a greater tendency in elderly patients and those comorbid with heart failure, liver disease, or malignancies.<sup>3</sup> In the still-ongoing COVID-19 pandemic, please consider the possibility of vaccine-associated immune thrombosis and thrombocytopenia/thrombosis with thrombocytopenia syndrome in patients with STEMI without apparent comorbidities who have received the SARS-CoV-2 vaccine, especially when thrombocytopenia and abundant thrombi, but no significant atherosclerosis, are disclosed on coronary angiography.

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