

IMAGE FOCUS

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Vaccine-induced immune thrombocytopenia and thrombosis associated anterior ST-elevation myocardial infarction

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A 40-year-old male, with no cardiac risk factors, presented with sudden onset, severe, central chest pain 7 days after receiving the first Oxford-Astra Zeneca SARS-CoV-2 vaccine dose. This was associated with anterior ST-segment elevation on electrocardiogram (Panel A), marked troponin elevation (peak 2726 ng/L; normal <14 ng/L), significant thrombocytopenia with a platelet count of $7 \times 10^9/L$, a D-dimer of 80 000 µg/L (FEU) and anti-PF4 seropositivity. Echocardiography revealed akinesia of the mid-to-apical antero-septum and apex (ejection fraction ~45%). Refractory thrombocytopenia precluded coronary angiography and primary angioplasty. Computed tomography coronary angiography demonstrated extensive layered thrombus from the ostium of the left anterior descending (LAD) artery with moderate proximal-LAD stenosis and complete mid-LAD occlusion (Panel B), suggesting the diagnosis of coronary thrombosis due to vaccine-induced immune thrombocytopenia and thrombosis (VITT).

Plasmapheresis, intravenous immunoglobulins, methylprednisolone, and rituximab were successively administered to manage the VITT. The ST-elevation myocardial infarction was treated medically with argatroban and guideline-directed doses of ramipril, bisoprolol, and atorvastatin. Critical care doses of argatroban were replaced with twice daily fondaparinux before transition to apixaban monotherapy. Concurrent antiplatelet and anticoagulation therapy were avoided to reduce bleeding risk. Cardiovascular magnetic resonance imaging 4 weeks later revealed near-transmural infarction associated with regional wall motion abnormalities (Supplementary data online, Video S1) in the LAD territory involving 7/17 segments (Panels C–E).

As vaccine roll out continues globally, there is now a well-documented, albeit small, risk of vascular thrombotic events associated with the Oxford-Astra Zeneca vaccine. Multimodal imaging was key in defining the cardiac pathology in the setting of severe thrombocytopenia and guiding management.

Supplementary data are available at *European Heart Journal - Cardiovascular Imaging* online.

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