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IMAGES IN INTERVENTION

Acute Coronary Tree Thrombosis After Vaccination for COVID-19

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Although the 3 authorized vaccines for COVID-19 appear to be very safe (1-3), the vaccines are quite new and dedicated for a new disease, which calls for even very rare events to be shared and discussed broadly with the medical community. Therefore, we would like to present a clinical case of a serious adverse event, possibly linked to 1 of the vaccines for COVID-19.

An 86-year-old man with a history of prostate cancer treated with prostatectomy and radiotherapy in 2006 and, until recently, with androgen receptor inhibitor (enzalutamide), had paroxysmal atrial fibrillation (treated with apixaban 2.5 mg twice a day), without any previous allergies to drugs or vaccines, was qualified to receive vaccination for COVID-19. On January 27, 2021, the patient received the first dose of Pfizer-BioNTech vaccine (Pfizer, New York, New York). Approximately 30 min after the injection, the patient collapsed. Based on electrocardiogram findings, acute ST-segment elevation myocardial infarction of the inferior wall was diagnosed (**Figure 1A**) and was referred to our center. On admission, the patient was unconscious, with clinical and hemodynamic signs of cardiogenic shock and recurrent bradyarrhythmias. Coronary angiography revealed occlusions/distal embolization in the distal part of the left anterior descending coronary artery, in the first diagonal branch, and in the distal part of the dominant right coronary artery, with large thrombus (**Figures 1B and 1C**). The primary percutaneous coronary intervention of the right coronary artery with manual aspiration thrombectomy was performed, along with coronary balloon angioplasty and glycoprotein IIb/IIIa receptor inhibitor (eptifibatide) administration, resulting in coronary flow improvement (**Figure 1D**). What is noteworthy, full patency of the left anterior descending coronary artery and first diagonal branch, and no signs of previous thrombus were observed in the control left coronary artery angiogram (**Figure 1E**). This could be related to the very short time between the thromboembolic event and the treatment. Unfortunately, on January 30, 2021, the patient died.

Although it is not possible to ascertain a causal relationship between vaccination and cardiac events, it is important to remember that that the mechanisms of thrombotic events in COVID-19 are still poorly understood (4). Moreover, the Kounis syndrome—as an adverse event after vaccination—may also be a possible explanation for the presented clinical situation (5). Therefore, the presented case of triple coronary artery thrombosis in a patient recently vaccinated against COVID-19 may provide a causative link between those facts. The study was approved by an appropriate Institutional Review Board.

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The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the Author Center.

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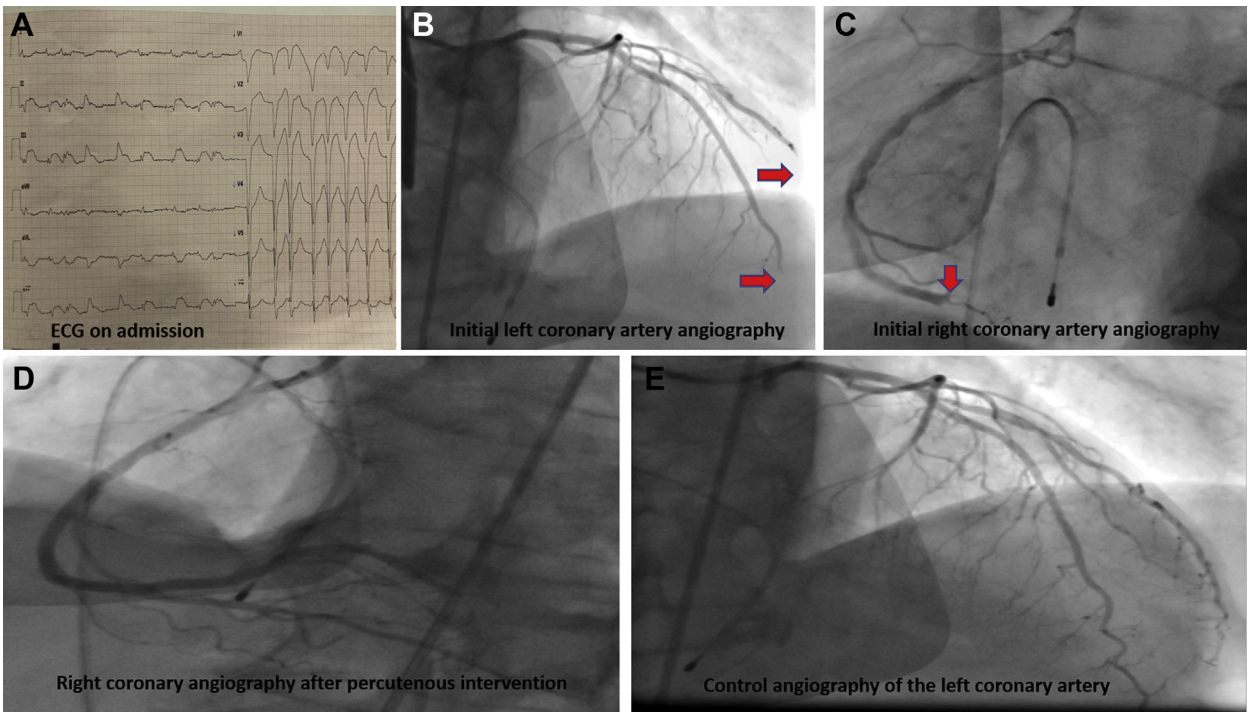
FIGURE 1 **The ECG and Coronary Angiography Findings**



(A) Electrocardiogram (ECG) on admission; **(B)** initial left coronary artery angiography with occlusion of the left anterior descending artery and the first diagonal branch **(arrows)**; **(C)** initial right coronary artery angiography with large thrombus **(arrow)**; **(D)** right coronary artery after percutaneous coronary intervention; **(E)** control angiography of the left coronary artery.

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