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Acute myocarditis after administration of BNT162b2 vaccine against COVID-19

Miocarditis aguda tras la administración de la vacuna BNT162b2 contra COVID-19

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COVID-19 mRNA vaccines have been associated with the development of myocarditis, specifically in young men after the administration of the second dose, with a low rate of 1 case/10 000 vaccinated people[1].

We present the case of a 28-year-old male patient without the previous medical history referring chest pain episodes for the past 3 days. He received the second dose of BNT162b2 vaccine against COVID-19 4 days before. Electrocardiogram showed 1mm ST-segment elevation in lateral and inferior leads (Fig. 1) and high-sensitivity cardiac troponin T (hs-cTnT)) was 1470 ng/L (< 14 ng/L). Normal left ventricle (LV) ejection fraction without wall motion abnormalities (WMA) was noted in echocardiogram. Acute COVID-19 infection was ruled out by negative SARS-CoV-2 polymerase chain reaction test, chest X-ray was normal (Fig. 1).

The patient was admitted and remained asymptomatic requiring no treatment. The peak value of hs-cTnT (2200 ng/L) was reached the day 5 after vaccination. Given its low yield, no serological tests for cardiotrophic viruses were ordered. Within the first 24 h, cardiac magnetic resonance imaging was performed, and mapping sequences showed increased T2 values in inferior

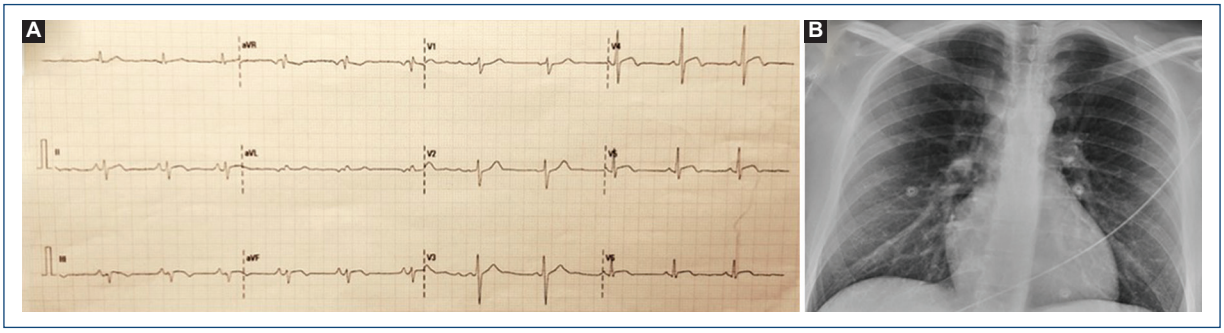

Figure 1. A: electrocardiogram showing 1 mm ST-segment elevation in lateral and inferior leads. **B:** normal chest X-ray.

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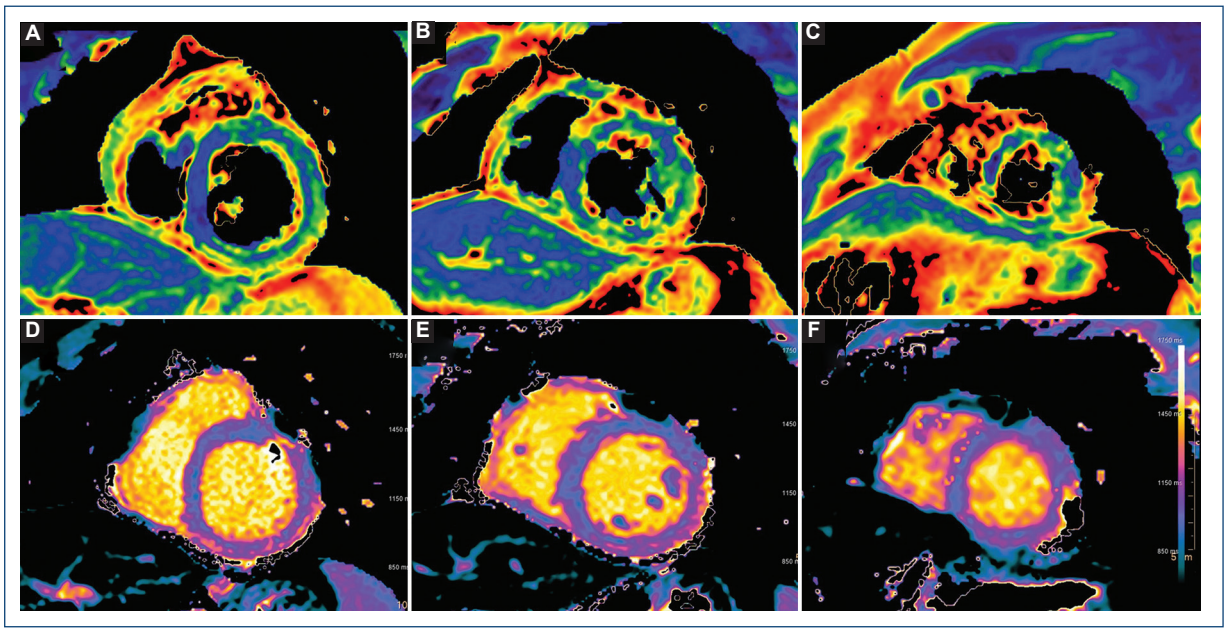

Figure 2. Advanced tissue characterization with cardiac magnetic resonance imaging: T2 mapping sequences. **A:** basal short axis, note the increased values in inferior and inferolateral segments. **B:** mid short axis. **C:** apical short axis. T1 mapping sequences. **D:** basal short axis, note the increased value in the inferior segment. **E:** mid short axis. **F:** apical short axis.

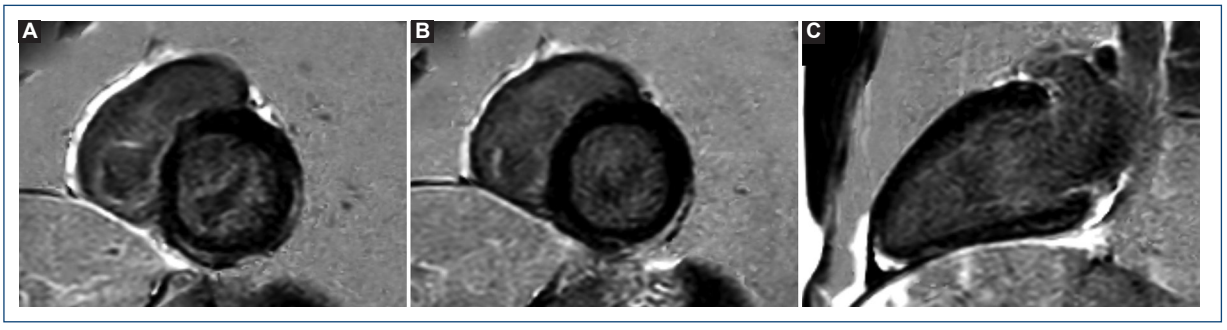

Figure 3. Late gadolinium enhancement with cardiac magnetic resonance imaging. phase-sensitive inversion recovery sequences. Note the subepicardial and intramyocardial pattern. **A:** basal short axis. **B:** mid short axis. **C:** 2-chamber long axis.

and inferolateral basal segments (67 ms and 63 ms; normal < 60 ms) indicating myocardial oedema (Fig. 2); native T1 was also increased in inferior basal segment (1130 ms, normal < 1050 ms, Fig. 2). Late gadolinium enhancement with subepicardial and intramyocardial pattern was observed in the region with edema, and in mid-inferior and mid-inferolateral segments (Fig. 3). LV showed normal systolic function and no WMA. The final diagnosis was acute myocarditis in relation with mRNA vaccine against COVID-19. The patient was discharged after 5 days without complications, and he has not presented any events in the subsequent 4 months.

Albeit relative uncommon, physicians must be aware of this adverse event of COVID-19 vaccination, but keeping in mind its undoubtedly favorable benefit-risk profile[1-3].

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Conflicts of interest

The authors declare that they have no conflicts of interest.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

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