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FLASHLIGHT
Other

Fatal cerebral haemorrhagic infarction due to left ventricular thrombus after healing of immune checkpoint inhibitor-associated myocarditis

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A 73-year-old man had renal cell carcinoma with lung metastases and received two cycles of nivolumab. He had a past history of myocardial infarction. Two weeks after the last administration of nivolumab, he was admitted to our hospital due to chest pain. His serum troponin T level was elevated [2.02 ng/mL (normal level < 0.1)], and echocardiography showed that the left ventricular ejection fraction was mildly diminished with an akinetic apex wall. Coronary angiography excluded relevant coronary disease (Supplementary material online, *Figure S1*). Histopathological analysis of endomyocardial biopsy samples revealed an intense, patchy lymphocytic infiltrate within the myocardium (*Figure 1A*). The infiltrating cells were positive for CD68 or CD3 (*Figure 1B and C*). T-cell infiltrates comprised $CD4^+$ or $CD8^+$ T cells (*Figure 1D and E*). A small number of infiltrating cells were positive for CD20 (*Figure 1F*). He was diagnosed with myocarditis, and nivolumab was discontinued. He received pulse therapy with intravenous methylprednisolone followed by oral prednisolone, and troponin T levels normalized with chronic prednisone at 15 mg daily. Two months after the troponin levels

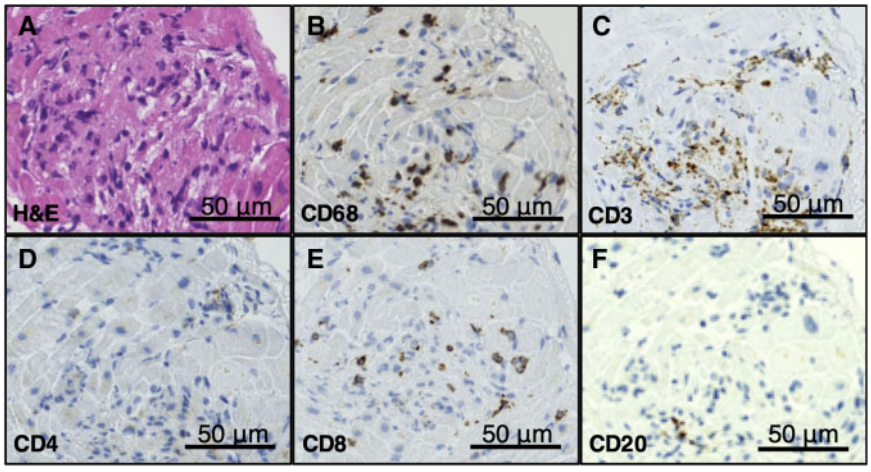

Figure 1 Histological analysis of endomyocardial biopsy. (*A*) Haematoxylin and eosin staining of the myocardial biopsy. (*B–F*) Immunohistochemistry of CD3 (*B*), CD68 (*C*), CD4 (*D*), CD8 (*E*), and CD20 (*F*) in the myocardial biopsy. Scale bar = 50 μm.

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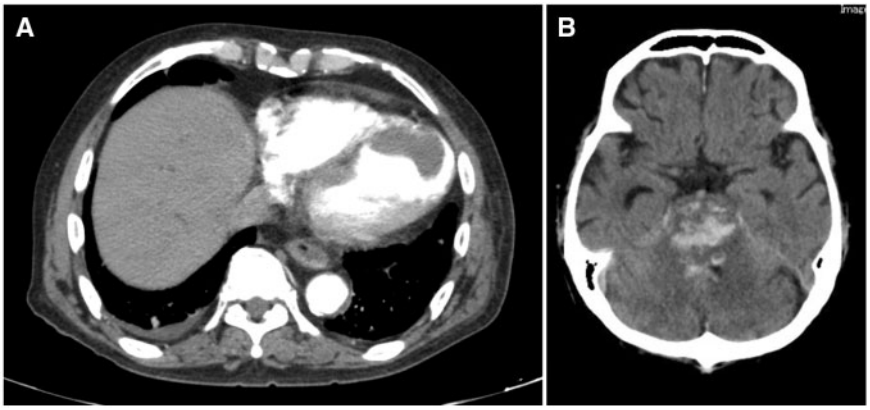

Figure 2 Computed tomography. (*A*) Computed tomography scan of the chest showing a left ventricular mural thrombus in the apex. (*B*) Computed tomography scan of the brain showing brain stem haemorrhagic infarction.

had normalized, he was hospitalized for bone metastases. Echocardiography (Supplementary material online, *Video S1*) and computed tomography (*Figure 2A*) revealed a left ventricular mural thrombus in the apex. Anticoagulation therapy was started, but he died 1 week later due to brain stem haemorrhagic infarction (*Figure 2B*).

In summary, this is a rare case of left ventricular thrombus formation after healing of immune checkpoint inhibitor-associated myocarditis. Careful long-term follow-up should be therefore performed in myocarditis patients due to immune checkpoint blockade.

Supplementary material

Supplementary material is available at *European Heart Journal - Case Reports* online.

Consent: The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

Conflict of interest: none declared.