Cardiac perforation caused by bone cement embolism

La perforation cardiaque causée par l’embolie de l’os cimenté

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We report a case of right ventricle perforation caused by bone cement embolism in an 86-year-old woman who had complained of progressive chest pain and fever for 6 days. She had a percutaneous vertebroplasty due to a compression fracture of L3–4, 5 years previously.

A chest X-ray obtained on admission showed a linear fishbone-like radiopaque material within the cardiac shadow (Fig. 1A). A computed tomography (CT) scan showed this structure to be stuck in the ventricular septum, penetrating the right ventricular free wall. There was no evidence of pulmonary cement embolism on chest CT scan. A transthoracic echocardiogram confirmed that the hyperechoic linear structure, embedded in the apical septal wall, showed lever-like movement with each heartbeat.

During admission, the patient developed high fever and leucocytosis and her general status deteriorated. Because the structure was suspected to have penetrated the ventricle, surgical removal was decided upon.

Abbreviation: CT, computed tomography.
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Figure 1. A linear fishbone-like radiopaque material seen on (A) chest X-ray and (B) contrast-enhanced thoracic computed tomography scan.

Figure 2. Retrieval of the cement fragments via right atriotomy: (A) linear bone cement perforating near the apex of the right ventricle, with the epicardium around the perforated hole showing some fibrotic changes; (B) after the right atriotomy, bone cement could be seen through the tricuspid valve; (C) gross specimen of the bone cement, measuring 7 cm in length.

Although there was little fluid on the CT scan or echocardiogram, we found a moderate amount of pericardial effusion when the pericardium was opened. Because the bone cement was densely adhered to the septal wall, the right atrium was opened and it was retrieved through the tricuspid valve (Fig. 2).

The patient’s postoperative course was uneventful. Fever was abolished after surgery, although microbiological testing did not show any infection caused by the bone cement. We hypothesize that injected cement probably escaped at the time of injection, entered into the venous system, moved slowly along the inferior vena cava and then entered the right ventricle.

Disclosure of interest
The authors declare that they have no conflict of interest concerning this article.