Intracardiac cement embolization in a 65-year-old man four months after multilevel spine fusion

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A 65-year-old man was transferred to our cardiac intensive care unit under suspicion for NSTEMI. His medical history included beside hypertension, diabetes mellitus, and adipositas (BMI 33 kg/m²), multilevel spine fusion L3–S1 4 months ago due to chronic back pain caused by a lumbar radicular syndrome. After rising from an armchair, the patient described a sudden onset of right thoracic, stabbing pain with radiation in the dorsal neck which was breath and position dependent.

ECG documented sinus rhythm (HR: 68 b.p.m.), left anterior bundle branch block, and right bundle branch block. However, a paroxysmal atrial fibrillation with spontaneous conversion into sinus rhythm was seen during monitoring. Blood tests revealed an elevated hs-troponin 80 ng/L (< 14 ng/L) and an elevated D-dimer of 1.68 mg/L (< 0.5 mg/L).

Coronary angiography showed only coronary sclerosis without significant stenosis. However, in the AP view there was a mobile, toothpick-like, foreign body in projection on the right ventricle (Panel A and Supplementary material online, Videos S1 and S2). Echocardiography showed a near normal LV-EF with normal valve function. In concordance with the fluoroscopy, however, a floating object in the right ventricle (Panel B, with arrow) and a pericardial separation filled with echo dense material was detected (Panel B, black arrow).

A computerized tomography showed a pericardial effusion in front of the right ventricle and the presence of a foreign body (50 × 2 mm) in the right ventricle, almost parallel to the tricuspid valve, fixed between the anterior wall and the interventricular septum. The object perforated the lateral wall up to the epicardial fat (Panels C and D).

In the synopsis of the findings, a bone-cement embolism after the multilevel spine fusion was suspected. The patient was sent to the operating theatre due to the threat of a cardiac tamponade. After median sternotomy and opening of the pericardium, a bloody pericardial effusion originating from the perforated tip of the foreign body in the anterior right ventricle area became visible. After establishment of the extracorporeal circulation and opening of the right atrium, the foreign body was seen in the right ventricle through the tricuspid valve (Panel E and Supplementary material online, Video S3). The object was completely removed (Panel F) and the right-ventricular perforation was overstitched. The pathological examination of the object confirmed bone cement. The following clinical course was uneventful.

In summary, the patient experienced a bone-cement embolism 4 months following multilevel spine fusion. Perivertebral cement leakage after augmented screw fixation is a frequent complication. However, cement leakage into the venous system rarely occurs after pedicle screw fixation. This case reminds of the potential risk for cement embolization as a cause of chest pain even long after spine surgery.

Supplementary material is available at European Heart Journal online.