Perforation of the right ventricle by bone cement: a rare complication of kyphoplasty

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A 64-year-old woman was referred to our Department of Cardiology after a cardiac magnetic resonance imaging, ordered for evaluation of chest discomfort, had detected three foreign objects of unknown origin in the right heart (Panel A). After admission, echocardiography (Panels B and C), supplementary material online, Videos S1–S4), chest X-ray (Panel D) and computed tomography (CT) (Panel E) confirmed the presence of three elongated foreign objects with thrombus formation in the right atrium and ventricle. Medical history revealed a balloon kyphoplasty which had been performed for osteoporotic fractures of the lumbar vertebral bodies 1 and 4 two months prior.

Due to the apparent thrombus formation and the patient’s mild symptoms, a regime of oral anticoagulation was started. An attempt to interventionaly remove the objects within 4 weeks was scheduled and the patient was discharged. Two weeks later, however, the patient was re-admitted to our emergency department due to progressive dyspnoea and chest discomfort. A repeat CT scan now revealed dislocation of one object with consecutive perforation of the right ventricle and moderate pericardial effusion (Panels F and G). The patient underwent urgent cardiomyotomy on cardiopulmonary bypass and three bone cement filaments were retrieved (Panels H and I). Retrospectively, these filaments originated from the kyphoplasty during which several milliliters of polymethylmethacrylate must have accidentally been injected into a paravertebral vein and subsequently embolized into the vena cava. The postoperative course remained uneventful and the patient fully recovered.

Pulmonary embolism of bone cement has been reported to occur in up to 4.6% of all patients after kyphoplasty. However, physicians should also be aware of the possibility of cardiac complications. If detected, intracardiac foreign bodies should be monitored by repetitive echocardiographic imaging and evacuated in a timely manner.

Supplementary material is available at European Heart Journal online.