Right atrial rupture following a blow with a wooden block in the sternal region

Pęknięcie prawego przedsionka po uderzeniu drewnianym klockiem w okolicę mostka

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Blunt chest trauma is generally the result of traffic accidents. Myocardial rupture is found in 10–15% of the victims of such accidents and, unfortunately, is characterised by a high mortality rate of up to 90%.

Our case study involves a 42-year-old man who was hit in the precordial region with a wooden block, approximately 7 cm × 7 cm × 40 cm, while working using a buzz saw. On admission, the patient was conscious, yet in a poor general condition. However, blood pressure of 80/60 mm Hg, and clear lungs on auscultation were observed, heart rate of 110/min was present, and a regular sinus. Standard ECG showed tachycardia of 110/min, normal QRS voltage complexes were present, no signs of acute myocardial ischaemia were observed. The chest X-ray revealed only slight parenchymal consolidations in the right cardiophrenic angle and a slightly enlarged heart silhouette. A computed tomography of the chest revealed contusion to the inferior segment of the right lung and fluid in the pericardial sac. Laboratory tests showed increased plasma concentration of troponin I — 17.86 ng/mL.

Due to progressive deterioration and developing shock, bedside transthoracic echocardiography (TTE) was performed, which detected cardiac tamponade with a large volume of fluid and thrombus, 3 cm thick, surrounding the apex of the heart and the right ventricle as well as a compressed wall of the right atrium, which was well filled in. However, colour Doppler echocardiography visualised neither the site of the heart injury nor abnormalities of the ascending aorta, nor the site of blood leakage to the pericardial sac (Fig. 1). Blood pressure was stabilised by dopamine infusion. The patient was urgently transferred directly to the surgical suite of the Department of Cardiac Surgery at the Provincial Hospital, located about 40 km from our centre. On opening the pericardial sac, the presence of a large volume of fresh blood and thrombus was detected, as well as a rupture to the right atrial free wall, near the ostium of the inferior vena cava, 1.5 cm large. The rupture was stitched; the surgery was performed 21 h following the chest trauma.

Twenty days after the patient's admission, he was discharged in a generally good condition. Five weeks following the incident, control echocardiography was performed which confirmed the correct function of the myocardium and a lack of fluid in the pericardial cavity (Fig. 2).

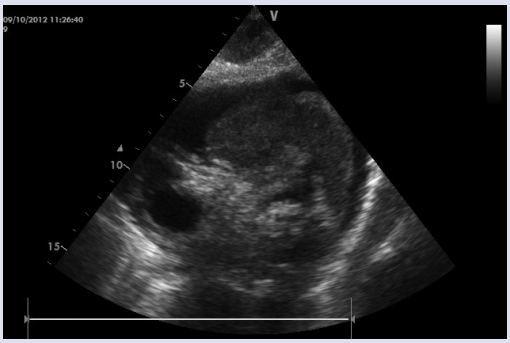

Figure 1. TTE, substernal view. Blood in the pericardial cavity, with thrombus surrounding the apex of the heart and the right ventricle

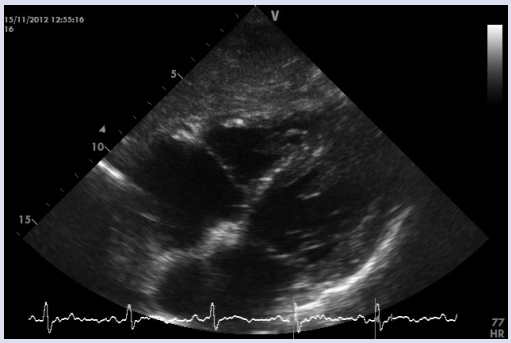

Figure 2. TTE, substernal view. Condition after stitching the right atrial rupture and evacuation of blood and thrombus from the pericardial cavity. Normal morphology of the myocardium; lack of blood in the pericardial cavity

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