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Acute tricuspid valve regurgitation in a motorcycle accident

Ostra niedomykalność zastawki trójdzielnej po wypadku motocyklowym

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Abstract

Tricuspid regurgitation is secondary in 90% of cases. We would like to present two case reports of primary tricuspid regurgitation caused by rupture of the papillary muscle as a result of traffic accidents. This series of cases presents a very rare heart injury caused by blunt chest trauma. Regular monitoring of echocardiographic parameters in the period between the stabilization of patients' condition after the accident and surgical correction of the tricuspid valve defect is an important point of patient care with severe tricuspid regurgitation.

Key words: acute tricuspid regurgitation, primary tricuspid regurgitation, heart injury

Tricuspid regurgitation is secondary in 90% of cases. This paper presents two case reports of primary tricuspid regurgitation caused by rupture of the papillary muscle as a result of traffic accidents.

An 18-year-old man suffered severe tricuspid regurgitation and orthopaedic injuries in a motorcycle accident. In 3 months, the patient underwent orthopaedic treatment and cardiological control to qualify for cardiac surgery. Echocardiography showed severe tricuspid regurgitation, caused by a rupture of the papillary muscle leading the tendon threads to the anterior leaflet of the tricuspid valve. The left ventricular ejection fraction was 55%, and the patient complained of exertional dyspnoea, which corresponded to New York Heart

Association class II. The patient was qualified for cardiac surgery to correct the valve defect. A sternotomy and cannulation of the ascending aorta and both vena cava were performed. On the beating heart, after opening the right atrium, the tendon threads of the anterior leaflet were sutured to the muscle of the right ventricle. Edwards MC3 34 ring was sewn in for stabilization. Follow-up transoesophageal echocardiography showed insignificant, small tricuspid regurgitation. Echocardiographic control after 4 months showed no significant changes.

A 26-year-old man suffered a traffic accident as a motorcycle driver. The patient underwent type II ASD correction surgery in childhood. After the accident, the patient was hospitalized for 5 days at the Department of General Surgery due to concussion, right shoulder injuries and right lung contusion. Three days after discharge from the hospital, he went to the ER for stabbing chest pain. Echocardiography revealed significant tricuspid regurgitation and a ballot formation on the tricuspid valve. A cardiac angio-CT examination confirmed a rupture of the papillary muscle of the right ventricle. The patient was admitted to the Department of Cardiac Surgery in a semi-elective mode for surgical correction of valve defect. A surgical procedure was performed in extracorporeal circulation, including resternotomy, suturing of the torn papillary muscle of the anterior leaflet to the right ventricular wall, and insertion of the Edwards MC3 Tricuspid Annuloplasty Ring 32. Intraoperative transoesophageal echocardiography confirmed the proper functioning of the valve after surgery. The course of hospitalization was uncomplicated.

The mechanisms responsible for such injuries in most cases are blunt force injuries [1], and car accidents are their most common cause. Typical tricuspid valve injuries include cord rupture, papillary muscle rupture, and leaflet rupture. Maisano et al. [2] reviewed 74 reported cases and found that cord rupture (n = 41, 55.4%) was the most common cause of tricuspid regurgitation. Severe tricuspid regurgitation is associated with poorer survival [3] and worsening heart failure [4]. Timely surgical treatment is essential to avoid irreversible right ventricular damage and multiple organ failure, which may be associated with increased surgical risk if interventional treatment is delayed [5].

This series of cases presents a very rare heart injury caused by blunt chest trauma. Regular monitoring of echocardiographic parameters in the period between the stabilization of patients' condition after the accident and surgical correction of the tricuspid valve defect is an important point of patient care with severe tricuspid regurgitation.

Conflict of interest

None declared.

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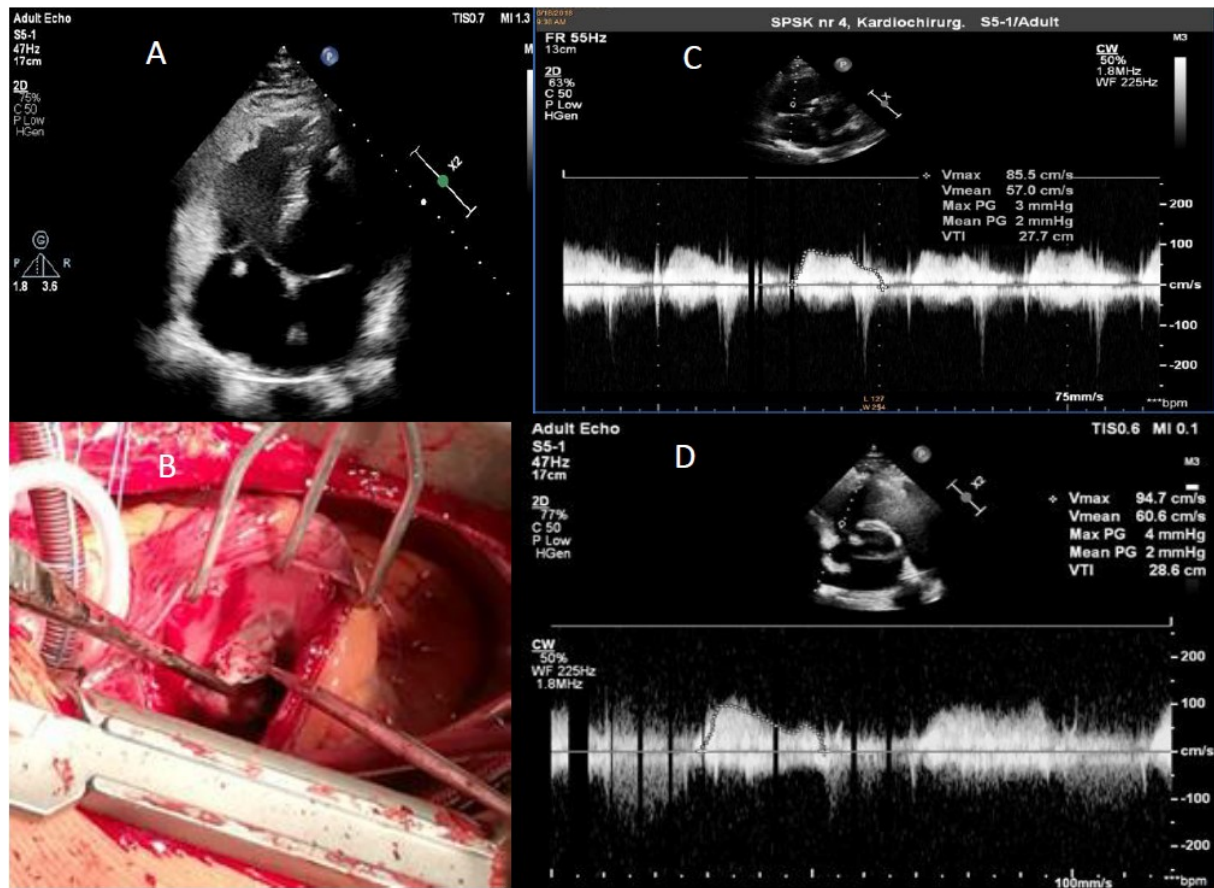


Figure 1. A. Fragment of the papillary muscle in the right atrium — echocardiography image; B. Fragment of the papillary muscle — intraoperative image; C. Discharge echocardiography of the first patient; D. Discharge echocardiography of the second patient