Acute myocardial infarction and mechanical complications due to a penetrating knife injury of the heart

Roberto Martín-Reyes*, Miguel Angel Navas Lobato, Rafael Peinado, Angel Sánchez-Recalde, Raúl Moreno, Mar Moreno Yanguela, Jose Luis López Sendón, and Ivan Gómez Blázquez

Department of Cardiology, Hospital La Paz, Paseo de la Castellana No. 261, 28046 Madrid, Spain

*Corresponding author. Tel: +34 607 425611, Fax: +34 607 425691, Email: rmartinreyes@yahoo.es

We report the case of a 21-year-old man who was brought to the emergency department after complaining chest pain and dyspnoea because of a stab wound in the chest. Promptly he became comatose and developed haemodynamic instability. On physical examination the jugular venous pressure was high, the blood pressure 80/50 mmHg, and the heart rate was 130 b.p.m.

A transthoracic echocardiogram was performed and cardiac tamponade was diagnosed. The patient underwent percutaneous pericardiocentesis and surgical correction by placing a bovine pericardium patch in the anterior left ventricle wall, without cardiopulmonary bypass.

Postoperative period was complicated with acute heart failure. On physical examination a new pansystolic murmur was heard. The electrocardiogram showed an established anteroseptal myocardial infarction (Figure 1A). Coronary angiography revealed cut-off in the mid left anterior descending (LAD) artery (Figure 1B). Transoesophageal echocardiography showed hyperdynamic left ventricle and akinesis of the anterior wall and apex with an image of muscle disruption in the anterior wall (Figure 2A). In long axis view was found severe mitral regurgitation because of posterior papillary muscle disruption (Figure 2B) in relation with the penetrating knife injury. Besides, an apical ventricular septal defect (Figure 2B) was found probably because of the acute myocardial infarction and apical aneurism.

The patient developed cardiogenic shock that required intra-aortic balloon and inotropic drugs followed by emergent re-operation. Under moderate hypothermic cardiopulmonary bypass with bi-caval cannulation, mitral insufficiency was repaired by suturing posterior papillary muscle. Ventricular septal defect required plastic repair with synthetic patches. Distal LAD artery was not appropriate for bypass grafting. The postoperative course of the second surgery was uneventful and the patient was discharged to home without any complications.

Penetrating cardiac injury is a clinical condition with high mortality rate. The outcome of patients with penetrating heart injuries depends to a great extent on aggressive primary care and early diagnosis using echocardiographic studies.

To the best of our knowledge this is the first live case reported after stab wound of the heart, with cardiac tamponade, acquired apical ventricular septal defect, secondary acute myocardial infarction (cutoff of mid-LAD), and mitral insufficiency related with papillary muscle rupture.

Figure 1 (A) Electrocardiogram presenting an established anteroseptal myocardial infarction. (B) Coronary angiography revealed cut-off in the mid left anterior descending artery (arrow) (see Supplementary material for movie clip).

Figure 2 (A) Transoesophageal echocardiography three-chamber (140°) view showed anterior wall muscle and posterior papillary muscle disruption (arrow). (B) Transoesophageal echocardiography, four-chamber view showed severe mitral regurgitation and ventricular septal defect. (See supplementary material for movie clp.)

Supplementary material is available at European Heart Journal online.