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Surgically managed gunshot injury of the heart; Bullet in the right coronary artery

Kalbin ateşli silah yaralanmasında cerrahi yönetim; Sağ koroner arterde kurşun

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Abstract

Gunshot injuries are one of the penetrating traumas of the heart and that require urgent intervention. Localization of the cardiac injury is important in terms of appropriate treatment approach. For this reason, rapid diagnosis and surgical intervention is life-saving in such patients. In our study, we present a surgical intervention of a patient with lesion on the right coronary artery that doesn't allow blood flow in coronary angiography due to cardiac injury with gunshot injury.

Keywords: Gunshot injury, Cardiac trauma, Surgery

Öz

Ateşli silah yaralanmaları, kalbin penetran travmalarından biridir ve acil müdahale gerektirmektedir. Kardiyak hasarın lokalizasyonu uygun tedavi yaklaşımı açısından önemlidir. Bu sebeple bu hastalarda hızlı tanı ve cerrahi müdahale hayat kurtarıcıdır. Çalışmamızda ateşli silah yaralanmasına bağlı kardiyak yaralanma nedeniyle koroner anjiyografide kan akışına izin vermeyen sağ koroner arter lezyon olan bir hastanın cerrahi müdahalesini sunduk.

Anahtar kelimeler: Ateşli silah yaralanması, Kardiyak travma, Cerrahi

Introduction

Penetrating cardiac traumas are rarely seen and life-threatening clinical situations. Rapid and correct diagnose and intervention are important. Although prognosis and outcome is often not good in cardiac gunshot injuries, here we presented a successful surgical management of right coronary injury due to gunshot.

Case presentation

A 42-year-old man was transferred our hospital with multiple penetrating wounds from a shotgun. The patient was conscious at the time of admission and physical examination revealed multiple pellet injuries in the skull, face, chest, abdomen and upper and lower extremities. The electrocardiogram showed changes indicating an acute inferior wall myocardial infarction. Multiple pellets in the chest and abdomen, including one in the heart was seen in CT images. Two-dimensional echocardiography showed minimally pericardial effusion near lateral wall. Emergent coronary angiography was performed to the patient and it was seen that there was a complete occlusion of the distal right coronary artery with a pellet embedded in the heart (Figure 1).

As the worsening of the vital signs urgent operation was decided. Aorto-right coronary bypass with saphenous vein was done. Bullet was untouched because for being deeply settled and the patient was discharged from hospital postoperatively 12th day without any cardiac problem.

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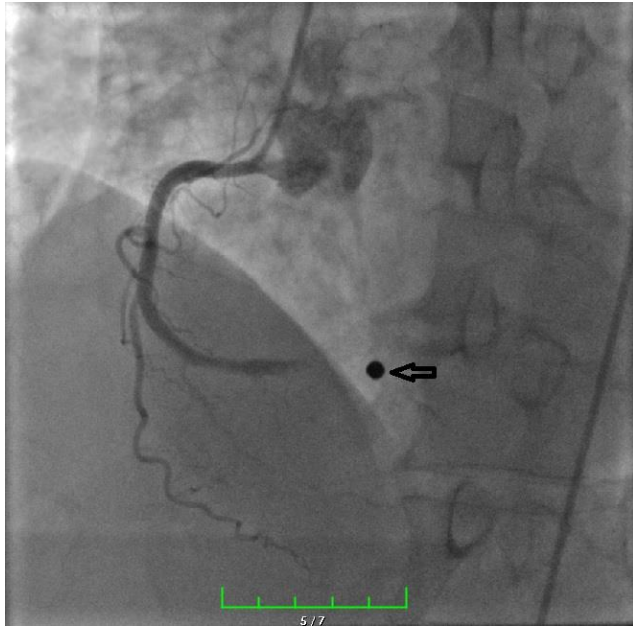


Figure 1: A foreign material caused total occlusion of right coronary artery in coronary angiography

Discussion

Traumas result to cardiac injury can be classified as penetrating and nonpenetrating. Penetrating cardiac trauma is rarely seen and intravascular and intracardiac bullets are a diagnostic and therapeutic challenge. Myocardial rupture, contusion, laceration, pericardial insult, coronary injury, valvular damage, arrhythmias and conduction abnormalities can be seen after these traumas. Stab or gunshot wounds are the most frequent penetrating injuries [1]. Penetrating injury to the heart may result in intracardiac injury in different sites; the right ventricle is the most common (43%), followed by the left ventricle (33%), right atrium (15%), left atrium (6%) and intrapericardial great vessels (6%) [2].

Similarly in our case, various case studies reveal that trauma is one of the nonatherosclerotic factors associated with acute myocardial infarction [3]. Although there are few reports related to a gunshot injury to a coronary artery managed conservatively that ended with a favorable outcome, our patient had total occlusion of the right coronary artery, caused complicated inferior myocardial infarction, needed to surgery [4].

Although penetrating cardiac traumas are rarely seen, there is a short time lag to keep the patients alive [5]. Approximately 80-90% of the patients with gunshot wounds of the heart cannot be reached to the hospital [6]. Wall et al reported the hospital mortality of complex cardiac injuries (coronary, septal, valvular) up to 53% [7]. The most common causes of mortality are cardiac tamponade or bleeding [1].

Management decision depends on the cardiac chamber involved, the patients' symptoms and the projectile's size, shape and location within the chamber [8]. Small pericardial and myocardial wounds with tamponade can be treated by pericardiocentesis, but larger wounds of the pericardium and myocardium due to the bullets should be managed by thoracotomy and sternotomy [6].

Cardiac foreign bodies are challenging clinical entities with varied manifestations that all surgeons should be aware of

so, acute operations for complex injuries are important and necessity for saving lives.

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