CASE REPORT

Intracardiac shrapnel fragment after blast injury in a hemodynamically stable patient: a case report from Somalia

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ABSTRACT

In conflict-affected regions such as Somalia, injuries resulting from terror-related explosions impose a substantial public health burden. Shrapnel injuries are frequently encountered and often lead to multiple trauma, with penetrating thoracic injuries among the most clinically significant. Although rare, cardiac trauma presents considerable diagnostic and therapeutic challenges for emergency physicians and trauma surgeons. While surgical intervention is typically indicated in hemodynamically unstable patients, the optimal management for retained intracardiac foreign bodies (FBs) in stable patients remains an area of clinical uncertainty. The decision between surgical removal and conservative observation is influenced by several factors, including hemodynamic stability, the presence of cardiac complications, and the characteristics of the retained object. We present a case of a hemodynamically stable patient in Somalia with a retained intracardiac shrapnel fragment following a terror-related explosion. Imaging studies, particularly transthoracic echocardiography, revealed a foreign body within the pericardial space, without evidence of tamponade or myocardial injury. Given the stable clinical course and absence of acute cardiac pathology, a non-operative strategy with close clinical and echocardiographic monitoring was adopted. The patient remained complication-free and was successfully managed. This case underscores the feasibility of conservative treatment in selected hemodynamically stable patients with intracardiac FBs and highlights the necessity of an individualized, multidisciplinary clinical approach in complex trauma scenarios.

Keywords: Intracardiac foreign body; penetrating cardiac trauma; shrapnel injury.

INTRODUCTION

Somalia has endured a protracted and multifaceted humanitarian crisis for over two decades. As in many other conflict-affected regions, terror-related injuries and fatalities represent a major public health concern.[1,2] A primary mechanism of injury in terror-related explosions is the dissemination of shrapnel fragments, which frequently result in multiple traumatic injuries. Although head and extremity injuries are commonly reported, internal organ damage most often involves the head and thoracic regions, with thoracic injuries accounting for approximately 63% of cases.[2] The management of penetrating thoracic trauma poses substantial challenges for emergency physicians and trauma surgeons. Penetrating cardiac injuries, in particular, may require aggressive resuscitative measures. However, the optimal management strategy for retained intracardiac foreign bodies (FBs) in hemodynamically stable patients remains controversial.[3] We present the case of a hemodynamically stable patient with a retained intracardiac shrapnel fragment resulting from a terror-related explosion, emphasizing clinical considerations in the management of penetrating cardiac injuries.

CASE REPORT

A 30-year-old woman with no known comorbidities was brought to the Emergency Department of Mogadishu Soma-

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lia-Türkiye Training and Research Hospital after sustaining a penetrating injury in an explosion. Upon arrival, the patient was hemodynamically stable, with a Glasgow Coma Score of 15.

She reported chest and abdominal pain. Physical examination revealed multiple shrapnel entry wounds involving the head, neck, thorax, and abdominal regions. A whole-body computed tomography scan was performed upon admission. Imaging revealed a small metallic FB located within the pericardial space, specifically in the anterior mediastinum (Fig. 1). No radiological evidence of pneumothorax or hemothorax was observed. Additional small metallic fragments were identified in the abdominal wall and right hepatic parenchyma, resulting in a parenchymal laceration. Minimal pneumohemoperitoneum was also noted.

Cardiovascular examination revealed normal heart sounds, with rhythmic and audible S1 and S2, and no S3. Abdominal examination demonstrated tenderness in the right upper quadrant. Laboratory investigations showed mildly elevated alanine aminotransferase and aspartate aminotransferase levels. Hemoglobin was 9.4 g/dL, consistent with the patient's baseline values. All other biochemical parameters, including complete blood count, cardiac enzymes, and coagulation studies, were within normal limits.

Transthoracic echocardiography identified a hyperechoic object located at the apex of the left ventricle, on the anterior surface of the heart in the short-axis view. There was no evidence of hemopericardium or cardiac tamponade. A cardiovascular surgery consultation was obtained, and no emergency surgical intervention was deemed necessary. However, due to the hepatic laceration, the patient underwent surgical management and was subsequently monitored in the intensive care unit during the postoperative period.

Repeat transthoracic echocardiography performed 48 hours later demonstrated a mild pericardial effusion without evidence of cardiac tamponade. Surgical intervention was again deemed unnecessary. The patient was discharged after four days of hospitalization with recommendations for regular outpatient follow-up.

DISCUSSION

Intracardiac FBs in hemodynamically stable patients are rare clinical entities.[4] Although they most commonly result from direct penetrating cardiac trauma, intracardiac FBs may, less frequently, originate from peripheral penetrating injuries and subsequently migrate through the venous system to the right ventricle.[5] Various types of intracardiac FBs have been reported in the literature, including acupuncture needles, venous catheters, guidewires, and surgical needles.[4]

In trauma patients, the diagnosis of intracardiac FBs is typically confirmed through radiological imaging. Echocardiography plays a pivotal role in evaluating cardiac structure and function and is highly effective in assessing the size, location, and mobility of retained foreign objects. Its sensitivity is reported to approach 100%.[6]

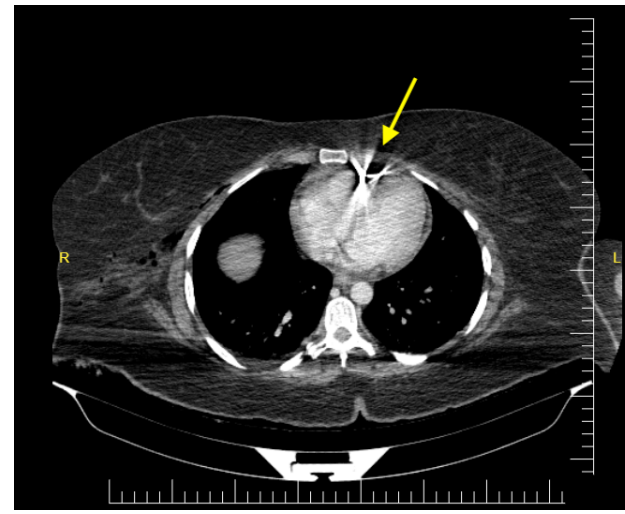


Figure 1. Metallic foreign bodies in the pericardial space, located in the anterior mediastinum (indicated by yellow arrow).

Although several factors influence patient management, the primary decision regarding retained intracardiac FBs centers around two main approaches: surgical removal versus conservative management.[7] Intracardiac FBs carry the potential risk of severe complications, including myocardial infarction, cardiogenic shock, and pericardial tamponade. These conditions are life-threatening and require urgent intervention.[7] In such cases, surgical extraction is typically recommended. However, in asymptomatic patients, or those in whom the FB causes only nonspecific symptoms, a conservative management approach is often recommended.[8]

In our case, the retained shrapnel fragment within the pericardial space did not result in acute cardiac complications such as myocardial infarction, tamponade, or arrhythmia, aside from a mild pericardial effusion. Consequently, a conservative cardiological management strategy was adopted.

CONCLUSION

Penetrating cardiac injury is a life-threatening condition with a high risk of mortality. In regions affected by war and terrorism, where blast injuries are prevalent and access to healthcare may be limited, the assessment and management of such devastating injuries require a complex, multidisciplinary approach. The optimal management strategy for retained intracardiac FBs in hemodynamically stable patients remains uncertain and should be individualized based on the specific clinical context.

This case presents a successful example of non-operative

management in a hemodynamically stable patient with a retained intracardiac shrapnel fragment. In clinically stable patients with intracardiac FBs, non-surgical treatment may be considered a viable option, provided that close follow-up and regular monitoring with echocardiography are maintained.

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OLGU SUNUMU - *ÖZ*

Patlama yaralanması sonrası hemodinamik olarak stabil bir hastada intrakardiyak şarapnel parçası: Somali'den bir olgu sunumu

Somali gibi çatışmalardan etkilenen bölgelerde, terör kaynaklı patlamalara bağlı yaralanmalar ciddi bir halk sağlığı yükü oluşturmaktadır. Bu olaylarda sık karşılaşılan şarapnel yaralanmaları, çoğu zaman çoklu travmalara yol açmakta olup, toraks bölgesine yönelik penetran yaralanmalar klinik açıdan en kritik olanlar arasındadır. Nadir görülmekle birlikte, kalp yaralanmaları acil tıp ve travma cerrahisi açısından önemli tanı ve tedavi zorlukları barındırır. Hemodinamik olarak stabil olmayan hastalarda cerrahi müdahale sıklıkla gerekli olmakla birlikte, stabil hastalarda kalpte kalan yabancı cisimlere yönelik en uygun yönetim stratejisi halen tartışmalıdır. Cerrahi müdahale ile konservatif izlem arasındaki karar, hastanın klinik durumu, kardiyak komplikasyonların varlığı ve yabancı cismin özellikleri gibi çok sayıda faktöre bağlıdır. Bu yazıda, Somali'de terör kaynaklı bir patlama sonrasında intrakardiyak şarapnel parçası saptanan ve hemodinamik olarak stabil seyreden bir olgu sunulmuştur. Görüntüleme yöntemleri, özellikle transtorasik ekokardiyografi ile perikardiyal alanda yabancı cisim tespit edilmiş; tamponad veya miyokardiyal hasar bulgusuna rastlanmamıştır. Stabil klinik seyir ve akut kardiyak patolojinin bulunmaması nedeniyle, yakın klinik ve ekokardiyografik takip ile cerrahi dışı bir yaklaşım tercih edilmiştir. Hasta komplikasyonsuz olarak izlenmiş ve başarıyla yönetilmiştir. Bu olgu, kalpte yabancı cisim bulunan seçilmiş stabil hastalarda konservatif tedavi seçeneğinin uygulanabilirliğini vurgulamakta ve karmaşık travma olgularında bireyselleştirilmiş, multidisipliner karar süreçlerinin önemine dikkat çekmektedir.
Anahtar sözcükler: İntrakardiyak yabancı cisim; penetran kardiyak travma; şarapnel yaralanması.

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