

Swallowed a needle stuck in heart

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ABSTRACT

Cardiac tamponade (CT) is a clinical entity characterized by hemodynamic insufficiency resulting from increased intrapericardial pressure due to accumulation of contents such as serous fluid, blood, and pus. CT is a treatable cause of cardiogenic shock, which can be fatal unless diagnosed promptly. Dyspnea, chest pain, hypotension, tachycardia, pulsus paradoxus, raised jugular venous pressure, muffled heart sounds, decreased electrocardiographic voltage, and enlarged cardiac silhouette on chest X-ray are the major clinical signs in CT. Idiopathic or viral pericarditis, iatrogenic trauma during percutaneous coronary interventions or coronary artery bypass grafting, external trauma, malignancies, acute or chronic kidney disease, collagen vascular diseases, tuberculosis, radiation on the chest wall, hypothyroidism and aortic dissection are the etiologic factors. Herein, we present a case of surgically treated CT, which was diagnosed in the third day of ingestion of a sewing needle.

Key words: Cardiac tamponade; esophagus; needle.

INTRODUCTION

Cardiac tamponade (CT) is a clinical entity characterized by hemodynamic insufficiency resulting from increased intrapericardial pressure due to accumulation of contents such as serous fluid, blood, and pus.^[1] Idiopathic or viral pericarditis, iatrogenic trauma during percutaneous coronary interventions or coronary artery bypass grafting (CABG), external trauma, malignancies, acute or chronic kidney disease, collagen vascular diseases, tuberculosis, radiation on the chest wall, hypothyroidism, and aortic dissection are the etiologic factors.^[2]

Herein, we present a case of surgically treated CT, which was diagnosed in the third day of ingestion of a sewing needle.

CASE REPORT

A 35-year-old male patient was admitted to our emergency clinic with the complaints of abdominal pain, progressive dys-

pnea and palpitations started after ingestion of a meal 3 days ago. In his physical examination, the arterial blood pressure was 80/40 mmHg, and he was tachycardic and tachypneic. Cardiac auscultation revealed muffled heart sounds and there were not any murmurs or pathologic sounds. There were jugular venous distension and hepatomegaly. The electrocardiography (ECG) revealed sinus tachycardia and low QRS voltage. In chest X-ray, the cardiothoracic ratio was increased, and there was a metallic needle density over the diaphragm (Fig. 1a).

In transthoracic echocardiography, a pericardial effusion with 3 cm width was detected surrounding the entire heart resulting in diastolic collapse of the right ventricle. The patient was then examined under scopy, and a sewing needle with 4 cm length was shown to have a synchronized motion with the heart. A thorax computer tomography was taken, and the needle was demonstrated to have one tip in the distal esophagus and the other tip in the pericardium next to the left atrium (Fig. 1b).

An emergency surgery was performed. After median sternotomy, the pericardium was opened vertically, and cardiac decompression was achieved. The fibrin and hematoma on the heart was cleaned. When the heart was exposed and lifted, a 4-cm long sewing needle which had its 2 cm portion in the pericardium was extracted (Fig. 1c and d). The thorax was closed after bleeding control. Then the patient was discharged in the 3rd day without any complications.

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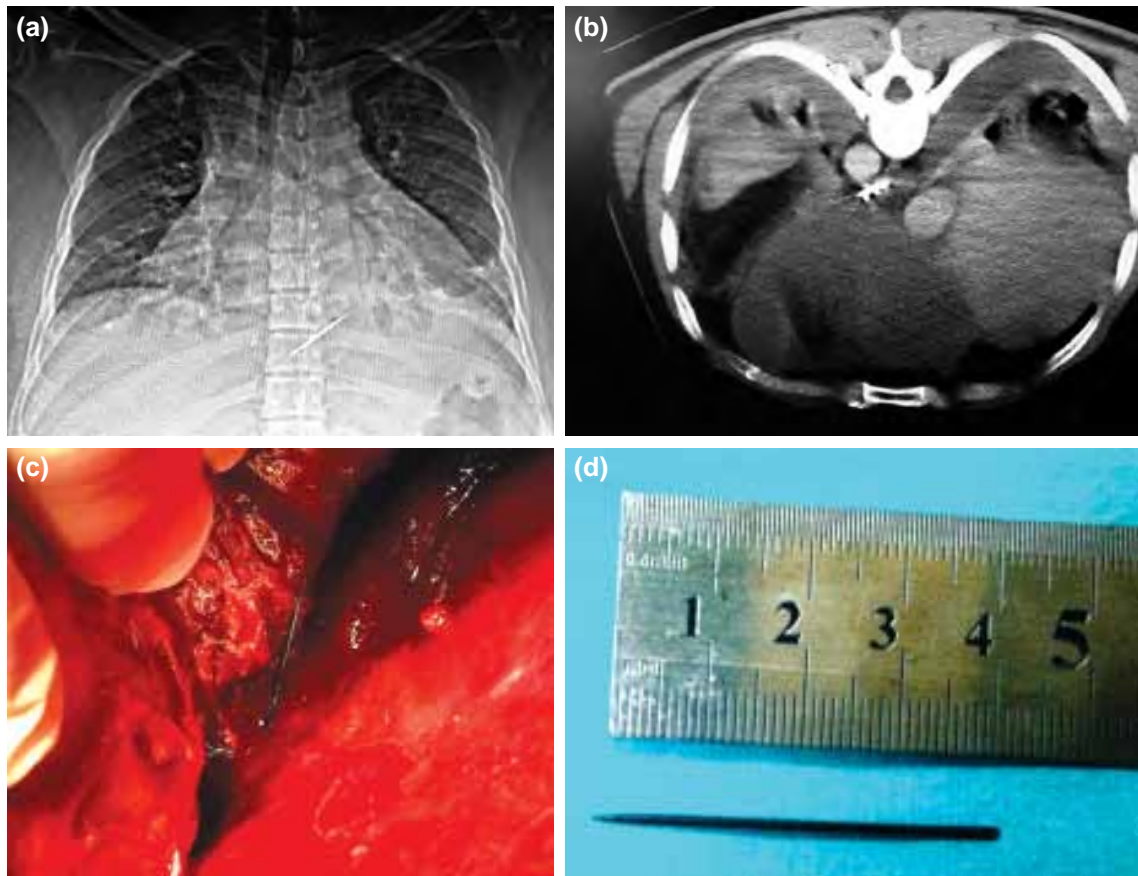


Figure 1. (a) Appearance of the needle on chest. (b) Computer tomography image of the needle. (c) The needle during operation. (d) The needle after operation.

DISCUSSION

CT causes hemodynamic insufficiency due to compression of heart chambers by a pericardial fluid leading increased pericardial pressure.^[1] CT is a treatable cause of cardiogenic shock which can be fatal unless diagnosed promptly.^[1] Dyspnea, chest pain, hypotension, tachycardia, pulsus paradoxus, raised jugular venous pressure, muffled heart sounds, decreased ECG voltage, and enlarged cardiac silhouette on chest X-ray are the major clinical signs in CT.^[3] The percutaneous pericardiosynthesis, balloon pericardiotomy or surgical drainage are the treatment options depending on the clinical presentation.^[3-5] Depending on the rate of effusion formation, CT can have rapid or slow progression. This situation shows that tamponade is related mostly to the rate of accumulation of fluid in the pericardium rather than the quantity of effusion.

The mean right atrial filling pressure formed by normal systemic venous return is 6-8 mmHg.^[6] During CT the rapid accumulation of fluid in non-elastic pericardial cavity prevents the filling of the right atrium.^[6] The intrapericardial pressure first overcomes the right atrial pressure then the right ventricular pressure was overcome.^[6] The cardiac output falls depending on increased intrapericardial pressure over right

heart pressures, which then causes clinical CT.^[6] Depending on the rate of effusion formation, CT can have rapid or slow progression. This situation shows that tamponade is related mostly to the rate of accumulation of fluid in the pericardium rather than the quantity of effusion.

The right heart catheterization is diagnostic, but now-a-days transthoracic echocardiography takes the role since it is non-invasive, rapid, and reliable.^[7] The main echocardiographic findings are compression of right heart chambers, dilatation of the inferior vena cava without respiratory variation of its diameter and increased respiratory variation of intracardiac Doppler velocities.^[1,2] Besides its diagnostic importance, echocardiography is a useful guide during pericardiosynthesis.^[1,2] Echo-guided pericardiosynthesis is a reliable, rapid and well-tolerated procedure. A study in Mayo Clinic revealed that it has 97% success and 4.7% total complication rate.^[4] However, Gumrukcuoglu et al. reported that it has 97% success and 10% total complication rate.^[1]

In 1826, Larrey defined drainage procedure for pericardial effusion through sub-xiphoid region.^[8] Emergency pericardiosynthesis can relieve CT, but surgical drainage may be necessary, especially in tamponades after trauma, CABG and percutaneous coronary interventions.^[8] Surgical sub-

xyphoidal window is a simple and reliable procedure and has lesser mortality, complication, and recurrence rates.^[8] In foreign body or trauma induced tamponades, as in our case, a sternotomy is necessary most of the time in order to evaluate and treat the cardiac injury properly. Surgical approach should be considered, especially in purulent, recurrent, and malignant effusions and if a biopsy is needed for the diagnosis.^[1] In a study in Mayo Clinic, 88 patients who experienced CT due to catheter-based procedures and underwent pericardiosynthesis with guidance of echocardiography were studied retrospectively and cardiac surgery after pericardiosynthesis was shown to be 18%.^[4]

Olivotti et al.^[8] reported an ingested metallic wire, which caused CT passing into the pericardium through esophagus. A few CT cases after ingestion of a metallic wire or needle which then passed through diaphragm, was previously reported also. In a few case reports, it was stated that a Kirschner wire left its location and reached the heart via arterial route leading CT. Gevaert et al. reported a case in which a 3-cm long sharp piece of crab caused CT passing through the diaphragm.

Herein, we present a CT case of a sewing needle, which was ingested and passed into the pericardium through the esophagus and lead tamponade by disruption of the right atrium. As a result, pericardial effusion and tamponade have a lot of

reasons. It must be kept in mind that ingested metallic wires or needles can pass into the pericardium through esophagus or diaphragm and lead tamponade.

Conflict of interest: None declared.

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OLGU SUNUMU - ÖZET

Yutulup kalbe saplanmış iğne

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Kardiyak tamponat (KT) seröz sıvı, kan ve püğ gibi içeriklerin birikiminin yol açtığı intraperikardiyal basınç artışı sonucu hemodinamik yetersizlikle karakterize klinik durumdur. KT acil olarak tedavi edilmediğinde ölümcül olabilen kardiyogenik şokun tedavi edilebilir bir nedenidir. Nefes darlığı, göğüs ağrısı, hipotansiyon, taşikardi, pulsus paradoksus, artmış juguler venöz basınç, derinden gelen kalp sesi, azalmış elektrokardiyografik voltaj ve akciğer grafisinde genişlemiş kardiyak silüet KT'nin majör bulgularıdır. İdiyopatik ya da viral perikardit, koroner baypas ya da perkütan koroner girişim sırasında oluşabilen iyatrojenik travma, eksternal travma, kanserler, akut ya da kronik böbrek hastalığı, kollojen doku hastalıkları, tüberküloz, göğüs duvarına radyasyon, hipotiroidi ve aort diseksiyonu etiyolojik faktörlerdir. Biz burada dikiş iğnesinin yutulmasının üçüncü gününde tanı konulan ve cerrahi olarak tedavi edilen KT olgusunu sunduk.

Anahtar sözcükler: İğne; kardiyak tamponat; özofagus.

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