Incarcerated Gastro-thorax: a rare and delayed presentation of diaphragmatic injury due to multiple stab wounds.

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ABSTRACT

Diaphragmatic injuries due to thoraco-abdominal penetrating trauma may often go unnoticed at the initial admission, especially in patients who are asymptomatic, with stable hemodynamic and respiratory parameters. Such occult diaphragmatic perforations can result in latent morbidity and mortality due to delayed trans-diaphragmatic herniation of the abdominal viscera leading to incarceration, strangulation and perforation. Here we report a case of an initially asymptomatic patient who had sustained multiple truncal stab injuries and presented two months later with a trans-thoracic incarceration of the stomach which was accurately diagnosed and successfully repaired at the time of surgery. This case report highlights the importance of exploring thoraco-abdominal penetrating injuries even in the absence of initial clinical and radiological signs, so as to promptly identify occult and isolated diaphragmatic perforations and prevent delayed catastrophes. The clinical features, radiological findings, diagnostic difficulties and surgical options are discussed along with review of relevant literature.

INTRODUCTION

Occult diaphragmatic perforations due to stab wounds rarely cause initial symptoms and are usually missed by most currently used clinical and radiologic methods. Abdominal organ herniation due to diaphragmatic injury was first described by Sennertus in 1541. The first successful repair was performed by Riolffi in 1886. The reported incidences of thoraco-abdominal penetrating diaphragmatic injuries are between 10-42%. These lesions are usually smaller in size than blunt injuries and are therefore associated with a greater risk of obstruction and strangulation. The reported rates of initially undiagnosed case are between 12 to 60%. We report a case of delayed presentation of penetrating diaphragmatic injury manifesting as incarcerated gastric herniation. The need for identifying diaphragmatic injury during the initial admission is emphasized.

CASE REPORT

A 23 yr old male presented to the casualty with complaints of severe epigastric and lower chest pain, and vomiting of two days duration. Three months back, he had sustained three stab wounds: one over the right lower chest and two over the right upper abdomen. At that time,
Thoraco-abdominal radiography, ultrasonography and computed tomography scan (CT) were normal. However, we had advised surgical exploration, but the patient and his relatives were reluctant and decided to seek treatment elsewhere. He was thus taken to another hospital. As he was asymptomatic, surgical exploration was not done. He was discharged shortly afterwards and remained asymptomatic until now. During the present admission, clinical examination revealed tenderness over the epigasric region with decreased air entry on the left side of the chest. X-ray chest and laboratory investigations were unremarkable. A CT scan was performed which showed almost the entire stomach, grossly distended and herniating through the left hemi-diaphragm into the thorax (figure 1).

Reformatted coronal and sagittal views helped demonstrate the hernia better. (figure 2,3) At emergency laparotomy the stomach along with the omentum was seen herniating through a 4cm long rent in the antero medial aspect of the left hemi diaphragm. Another rent about 2cm long was seen 5cm below this. The stomach was incarcerated and appeared congested. The stomach and omentum which were viable were reduced into the abdominal cavity and the defects were primarily repaired. An intercostal drain was instituted in the left hemithorax. His postoperative recovery was uneventful and was discharged on the 12th day.
Grimes in 1974 described three phases of diaphragmatic injury. The first (acute) phase begins at the time of the injury. The second (delayed) phase is usually asymptomatic, associated with herniation of abdominal contents and may occur over months or years. The third (obstructive) phase is characterized by complications such as incarceration, strangulation and perforation.

In asymptomatic patients with thoraco-abdominal stab wounds, the risk of an occult diaphragmatic injury is approximately 7%, and a mortality rate of 36% following delayed recognition. (6,7)

Diaphragmatic perforations following penetrating injuries are frequently associated with left sided wounds. In a study of 97 patients, the overall incidence of occult diaphragmatic injuries in left-sided thoracoabdominal stab wounds was 4 of 24 (17%), and was much lower after stab wounds of left epigastrium (0%), right lower chest (0%), and right epigastrium (4%). This case also highlights the rare situation of left sided diaphragmatic injury due to right sided stab wounds.

The clinical features of delayed presentations are often nonspecific and include abdominal pain, nausea, vomiting, dysphagia, chest pain and dyspnoea. The interval between injury and the onset of symptoms can range from several weeks to years. The delay in diagnosis may due to absence of symptoms at the time of injury as the herniation has not yet occurred. Chest radiography is the first line investigation but may be inconclusive and findings may include elevation of the hemidiaphragm, a bowel pattern in the chest, or a naso gastric tube passing into abdomen and entering the chest. CT is the mainstay in diagnosis of diaphragmatic rupture with a reported sensitivity of 71% and specificity of 100%. (8) Several other techniques have been proposed to investigate TDH.(9) Laparoscopy has been recommended as a new tool for detecting occult diaphragmatic injuries in the absence of other indications for formal laparotomy.4 CT scan was useful in diagnosing this condition in our case. Surgical treatment of long-standing post traumatic diaphragmatic rupture is similar to that of non traumatic diaphragmatic hernias. It is strongly suggested that penetrating injuries should be routinely explored surgically, even in asymptomatic patients so as to identify occult diaphragmatic injury and prevent delayed strangulation.(10)

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