CASE REPORT

Bile bronchial fistula as a complication of the non-operative treatment of hepatic trauma

Fístula biliobrônquica como complicação do tratamento não operatório do trauma hepático

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DOI: 10.5935/2238-3182.20140150

ABSTRACT

Bile bronchial fistula (BBF) is a rare complication of liver disease including the evolution of liver trauma. In most cases, its diagnosis is clinical and takes bilioptisis as the pathognomonic sign. Its approach surprises and challenges the surgeon, especially in relation to its treatment; and, in trauma, it is essential to control the hepatic lesion, which makes laparotomy the measure that arises in detriment of thoracotomy. This report describes the BBF's approach after trauma, with associated hepatic lesion as well as the strategy for its treatment.

Key words: Wounds and Injuries; Respiratory Tract Fistula; Digestive System Fistula; Biliary Fistulas; Bile Ducts; Liver.

RESUMO

A fístula biliobrônquica (FBB) é complicação rara da doença hepática, inclusive da evolução do trauma hepático. Seu diagnóstico, na maioria dos casos, é clínico, tendo como sinal patognomônico a bilioptise. Sua abordagem surpreende e desafia o cirurgião, especialmente em relação ao seu tratamento; e, no trauma, é essencial o controle da lesão hepática, o que torna a laparotomia medida que se impõe em detrimento da toracotomia. Este relato descreve a abordagem da FBB após o trauma, com lesão hepática associada, bem como a estratégia para o seu tratamento.

Palavras-chave: *Ferimentos e Lesões; Fístula do Sistema Respiratório; Fístula do Sistema Digestório; Fístula Biliar; Ductos Biliares; Fígado.*

INTRODUCTION

The bile bronchial fistula (BBF) is a rare entity consisting of communication between the biliary system and bronchial tree, with one of its' causes being a traumatic liver lesion in the thoracoabdominal region. It was first described in 1858 by Peacock[1] in two cases of echinococcosis.[2] Three cases of BBF were found in a review of 1,676 thoracoabdominal lesion in patients from WWII and the Korean war. However, its' exact incidence is still unknown.[3]

Other causes of BBF were described by Saylan[2], who classified them according to their etiology as:

- **congenital:** biliotraqueal fistula with carina trifurcation;
- **by thoracoabdominal trauma:** penetrating or blunt agents;

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Submitted: 2014/10/10
Approved: 2014/10/19

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- **by liver disease:** abscess, echinococcosis, acute cholecystitis, and even liver neoplasia, the latter being the most frequent cause (32% cases);[4]
- **by obstructive disease:** by biliary obstruction or secondary infestation of the biliary or pancreatic pathways;
- **iatrogenic (post-procedure):** percutaneous liver biopsy.

The rarity of BBF makes its' systematized approach based on cases, which can cause uncertainty in the surgeon in its resolution.

This report aims to raise awareness about this complication in the post-operative treatment of thoracoabdominal trauma with associated liver lesion, as well as the strategy for its treatment.

CASE REPORT

AJSA, 23 years old, male, victim of aggression by firearm in the right thoracoabdominal region, with entrance wound in the seventh intercostal space in the anterior axillary line, and exit hole in the back, in the ninth intercostal ipsilateral space.

The patient was admitted to the ER, hemodynamically stable and with mild respiratory distress. The computed tomography (CT) of the chest and abdomen showed liver lesion of IV degree in segments VI, VII, and VIII (Figure 1) and pulmonary contusion, hemothorax, and fracture of ribs on the right.

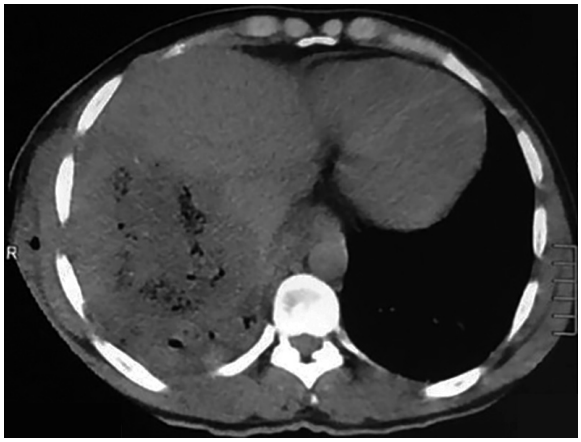

Figure 1 - Liver lesion of degree IV, in segments VII and VIII, visualized by CT scan of the abdomen performed at the patient's admission. Air is observed in the intimacy of the liver lesion from the lung lesion.

We opted for the non-operative treatment due to the hemodynamic stability and signs of ballistic pathway exclusive in the hepatic, diaphragmatic, and pulmonary topography. Draining of the right hemi thorax was established.

The patient evolved well during the first week, however, after removing the chest drain he presented tachycardia, fever, and cough with blood and purulent sputum. The antibiotic therapy was started because of suspicion of an infected pulmonary contusion. At the 18th day after the trauma, he presented bilioptisis (Figure 2), chest pain, and tachycardia. The thorax and abdomen CT showed pulmonary contusion with signs of improvement in relation to the admission image, small pleural effusion on the right, and liver lesion in regression with no signs of infection or bleeding.

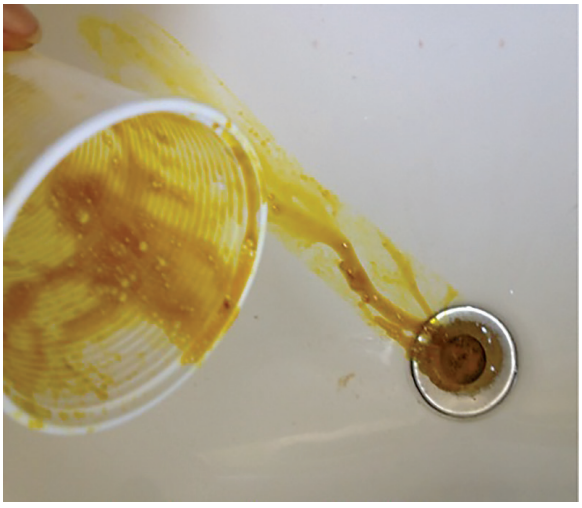

Figure 2 - Biliary sputum image (bilioptisis).

Surgical treatment was indicated due to the pathognomonic sign of BBF (bilioptisis). The access route was defined as laparotomy with the goal of treating the biliary leak directly as well as closing the diaphragm lesion. During the surgical procedure, parenchymal liver lesion, and corresponding diaphragmatic lesion were identified (Figure 3), both were sutured. Two supra-hepatic abdominal drains were positioned. The evolution proceeded without bilioptisis and progressive clinical improvement. The thoracic approach was not necessary due to the absence of clinical and radiological signs of complications in the pleural space. Patient was discharged on the 38th day of hospitalization.

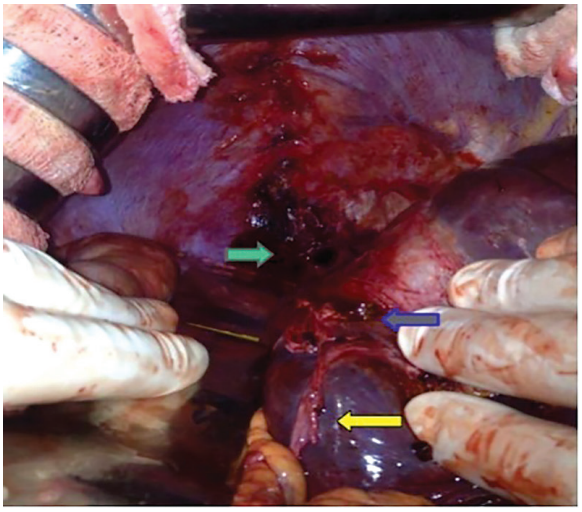

Figure 3 - Peri-operative image of liver and diaphragmatic lesions. The arrow on the left (green) demonstrates the diaphragmatic lesion. The arrow (blue) on the right points to the liver lesion. The most caudal arrow (yellow) shows the right coronary hepatic ligament released of its points of attachment to allow access to the entire liver diaphragmatic face.

DISCUSSION

Bilioptisis is referenced by Liao et al.[4] in all their patients with BBF with less frequent fever, jaundice, abdominal pain, chest pain, and dyspnea.[5]

The bilioptisis clinic is enough to start BBF treatment in trauma victims with direct lesions responsible for the fistula path. In the case of diagnostic doubt or non-traumatic hepatic disorders, contrasting exams of the bile route, such as endoscopic retrograde cholangiography (ERCP) or percutaneous hepatic cholangiography, are considered the gold standard tests for its diagnosis. However, the identification of bilirubin in the sputum is enough to define the diagnosis of BBF. Other treatments, less invasive and with good specificity alternatives, are magnetic resonance cholangiopancreatography and colomcistingraphy with hepatobiliary iminodiacetic acid.6-7 Thorax and abdomen CT are always recommended before the surgical procedure for the evaluation of hepatic, pulmonary, and pleural space lesions.

The BBF therapy requires: a) a direct fistula approach; b) sub-diaphragmatic closure once the pressure gradient between thorax and abdomen favors aspiration of abdominal contents toward the chest preventing fistula closure; c) wide drainage of the hepatic lesion. Unlike congenital BBFs, the thoracic approach of trauma for this condition is only recommended when there is significant accumulation of bile in the pleural space, empyema, or other surgical information documented by CT. Rarely to the chest, the surgical strategy must be decided prematurely and will depend on the evolution after BBF closure through the abdominal path.

The ERCP, for sphincterotomy, endoprosthesis in the biliary pathway, and percutaneous biliary drainage are conducts to be performed primarily for BBFs with other etiologies. However, it is believed that these less invasive measures prolong hospitalization time and are unable to avoid laparotomy in all cases. The more aggressive initial approach of BBF can bring more efficiency to its definitive treatment.7-10.

CONCLUSION

BBF is a rare clinical-surgical condition with several causes and can affect different hepatic and pulmonary segments. It constitutes a serious complication of the non-surgical treatment for penetrating right thoracoabdominal trauma.

There is no well-defined protocol for its' treatment; its' diagnostic and therapeutic approaches are diversified, which makes every patient unique.

However, it is possible to infer that certain principles must be respected in the treatment of post-traumatic BBF, which are: direct approach of the fistula, adequate drainage of the liver lesion, and closure of the diaphragmatic lesion.

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