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Role of diaphragm in pancreaticopleural fistula

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Abstract

A pancreatic pleural effusion may result from a pancreatopleural fistula. We herein discuss two interesting issues in a similar case report of a pleural effusion caused after splenectomy, which was recently published in the *World Journal of Gastroenterology*. Pancreatic exudate passes directly through a natural hiatus in the diaphragm or by direct penetration through the dome of the diaphragm from a neighboring subdiaphragmatic collection. The diaphragmatic lymphatic "stomata" does not contribute to the formation of such a pleural effusion, as it is inaccurately mentioned in that report. A strictly conservative approach is recommended in that article as the management of choice. Although this may be an option in selected frail patients, there has been enough accumulative evidence that a pancreaticopleural fistula may be best managed by early endoscopy in order to avoid complications causing prolonged hospitalization.

Key words: Fistula; Pleural effusion; Pancreatic surgery

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TO THE EDITOR

We have read with great interest the article by Shu-Guang Jin *et al*[1] that presented a case of pancreatic pleural effusion caused after splenectomy. In their work, the authors support the notion that the leaking fluid from a pancreatic duct disruption may reach the thoracic cavity by the lymphatic system and stomata. They also conclude that an active conservative treatment should be carried out in the early period of this complication to reduce the need for endoscopy or surgery. We feel that both of these statements need further discussions.

Pancreaticopleural fistula is a rare occurrence. This internal pancreatic fistula is usually caused by a chronic pancreatitis or, more rarely, it is a traumatic consequence. A pancreatic pleural effusion develops due to a direct passage of pancreatic exudate through a natural hiatus in the diaphragm[2] or by direct penetration through the dome of the diaphragm[3] from a neighboring subdiaphragmatic collection.

The most common cause of pancreaticopleural fistula is a pseudocyst formed in the lesser sac from an anterior disruption of the pancreatic duct that erodes the overlying diaphragm.

Although studies of the pathways of peritoneal fluid absorption indicate that the peritoneal surface of the diaphragm is the main site of drainage, this does not nec-

essarily suggest that this mechanism is implicated in pancreatic fluid transportation into the pleural cavity. Pleural liquid is a filtrate from capillaries in the parietal pleura lining the chest wall. Drainage from pleural space occurs *via* the lymphatics in the parietal pleura[4]. Peritoneal fluid enters the lymphatic lacunae (a rich plexus of flattened terminal lymphatics) *via* special mesothelial openings, the so called "stomata"[5]. This fluid is further transported *via* the parasternal route to the mediastinal nodes and then to the terminal thoracic duct or the right lymphatic duct[6] and not to the pleural cavity. The "stomata" system provides a direct route between the peritoneal cavity and lymphatics[7].

In the presented case of pancreatic pleural effusion after splenectomy, a left subphrenic encapsulated fluid collection was clearly revealed by an abdominal computed tomography. A pancreatic pseudocyst such as the aforementioned is almost invariably implicated in these rare cases of pancreatopleural fistula[8]. This communication happens through normal orifices or diaphragmatic erosion.

The protein-rich fluid with an elevated amylase content drained by the thoracocentesis was a great indicator of the pancreatopleural fistula which, as speculated, was the result of a posterior pancreatic duct rupture due to an intraoperative injury. The authors proposed that a purely medical treatment was appropriate for their patient, in order to reduce the need for endoscopy or surgery. This policy was recommended in their conclusions. Although the medical treatment proved effective in their case, one has to bear in mind the adverse consequences that may be caused by such an approach. Such a notion has been extensively emphasized by many researchers in the field. This therapeutic option usually requires prolonged hospitalization which contributes substantially to morbidity and cost. On the contrary, an early instituted endoscopic retrograde cholangiopancreatography (ERCP)[9] combined with either a papillotomy, a stent or a nasopancreatic tube may be an optional initial treatment. The role of early therapeutic endoscopy is constantly expanding[10] as it has proved beneficial instead of long-term conservative treatment. Up to 90% of the patients with pancreatic fistulas can be successfully treated by this modality, with minimal morbidity and no mortality[11].

Although formal treatment recommendations have not been adopted, the first line of treatment supported by most of the authors in the field includes drainage of the effusion, inhibition of pancreatic secretion with octreotide and ERCP plus stenting of the pancreatic duct.

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