Porous diaphragm syndrome after ERCP in a patient with bile duct stricture

Safra kanalı darlığı olan bir hastada ERCP sonrası gelişen sızdıran diyafram sendromu

To the Editor,

Endoscopic retrograde cholangiopancreatography (ERCP) is a useful diagnostic and therapeutic tool used in the evaluation of biliary and pancreatic pathologies. Here, we present a very rare case of porous diaphragm syndrome characterized by bilateral pneumothorax, pneumomediastinum, pneumoperitoneum, pneumoretroperitoneum, and diffuse subcutaneous emphysema as a complication of ERCP.

A 24-year-old man was admitted for evaluation of progressive jaundice. ERCP revealed a stricture in the distal common bile duct. Brushing cytology from the strictured area was employed and subsequently 10 French plastic stent was inserted for palliation of jaundice. After withdrawal of duodenoscope, the patient developed tachypnea and dyspnea. In the following minutes, subcutaneous emphysema extending from his face to his lower extremities was observed. Thoracoabdominal computed tomography revealed bilateral pneumothorax, pneumomediastinum, pneumoperitoneum, pneumoretroperitoneum, and subcutaneous emphysema (Figures 1, 2). Due to progressive dyspnea and tachypnea and increase in the size of bilateral pneumothorax, bilateral thoracic tubes were immediately inserted. The symptoms of the patient and radiographic findings were ameliorated after the placement of the chest tubes. At laparotomy, no perforation was identified. Microperforation around the strictured area remained a high possibility for the occurrence of diffuse emphysema. Chest tubes were removed on the third day of hospitalization. The patient responded to the treatment with dramatic physical and radiographic improvement and was discharged on the eighth day.

Porous diaphragm syndromes are characterized by the passages of fluids, gases, tissues, secretions

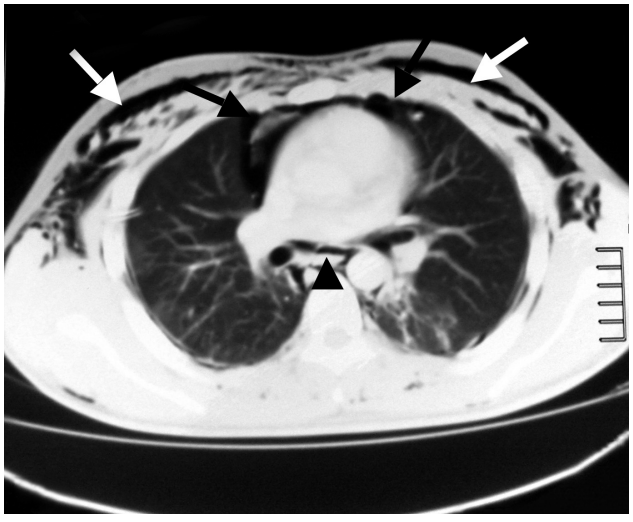

Figure 1. Thoracic computed tomography shows bilateral pneumothorax (black arrows), pneumomediastinum (black arrowhead) and subcutaneous emphysema (white arrows).

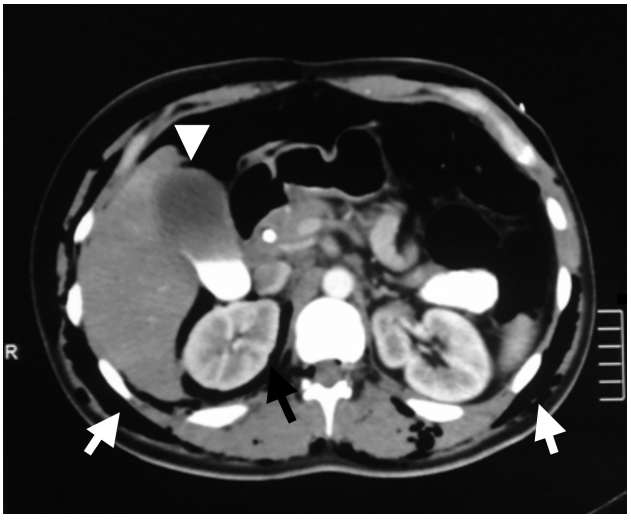

Figure 2. Abdominal computed tomography shows pneumoperitoneum (white arrowhead), pneumoretroperitoneum (black arrow) and subcutaneous emphysema (white arrows).

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and intestinal content through diaphragmatic pores from the peritoneum into the ipsilateral hemithoracic space (1). Bilateral pneumothorax with pneumomediastinum, pneumoperitoneum, subcutaneous emphysema, and pneumoretroperitoneum is a very rare complication of ERCP (2). Air leakage from the retroperitoneum into the peritoneum, mediastinum, pleura, or subcutaneous tissue results in pneumoperitoneum, pneumomediastinum, pneumothorax, or subcutaneous emphysema, respectively (1). The compressed air with high pressure in the lumen may create a pressure valve in a "locus minoris resistentiae" (ulcer, tumor with necrotic tissues, etc.) in the bile duct wall or intestinal wall of patients with no obvious perforation for the leakage of air from the lumen into the intraperitoneal or retroperitoneal area. Sudden and progressive abdominal pain with dyspnea after ERCP should alert the endoscopist to the possible development of porous diaphragm syndrome-related pneumoperitoneum and pneumothorax. Management with chest tube in appropriate indications yields relief of dyspnea and abdominal pain.

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