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*Corresponding author
*Márcia Carvalho, General Surgery Department, Centro Hospitalar do Médio Ave, Portugal

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Cervical emphysema caused by Colonic perforation – A Case report

Márcia Carvalho, Vânia Castro, Juliana Pereira-Macedo, Bárbara Freire, Carlos Oliveira, João Mendes, Nuno Muralha, Luís Madureira, Ricardo Lemos, Francisco Sampaio

General Surgery Department, Centro Hospitalar do Médio Ave, Portugal

Abstract

Introduction: Cervical subcutaneous emphysema and pneumomediastinum are often associated with traumatic events or surgical procedures. In rare situations, colonic perforations can manifest as pneumomediastinum and subcutaneous cervical emphysema.

Case Report: We present a case of a 65-year-old woman presenting in the emergency department with abdominal pain, constipation during the previous week, and vomiting for the last 12 hours. Physical examination showed crepitation in the chest wall and signs of peritoneal irritation. Chest and abdominal radiographs only showed right cervical emphysema. CT revealed subcutaneous emphysema and pneumomediastinum, with extraluminal feces and retropneumoperitoneum.

The patient underwent emergency exploratory laparotomy, which found fecaloid peritonitis and posterior colonic perforation. A Hartmann procedure was performed.

Conclusions: This is a rare way of colonic perforation presentation, with subcutaneous emphysema and pneumomediastinum. Surgeons should have a high level of suspicion when subcutaneous emphysema is found at presentation. In this case, a quick diagnosis and an emergent laparotomy were essential to achieve a good outcome.

Introduction
Cervical subcutaneous emphysema and pneumomediastinum are usually associated with traumatic events or surgical procedures 1, 2.

Potential causes include pneumothorax, gastrointestinal perforation, and necrotizing fasciitis. 1.

Rarely, colonic perforation manifests as pneumomediastinum and subcutaneous cervical emphysema.

Cases secondary to acute diverticulitis 1, toxic megacolon 3, or as a complication of colonoscopy have been described 4, 5, 6.

In this case report, we describe a rare case of cervical subcutaneous emphysema and pneumomediastinum caused by fecal impaction leading to sigmoid colon necrosis and perforation.

Case description
A 65-year-old woman presents to the emergency department due to diffuse abdominal pain, constipation during the last week, and vomiting for the last 12 hours.

Her relevant past medical history includes colon diverticulosis identified on a colonoscopy performed 5 years before. She had no history of abdominal surgery.

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The patient was hemodynamically stable and had no respiratory complaints. Physical examination showed crepitation in the chest wall, a distended abdomen with pain in the left quadrants and signs of peritoneal irritation.

Blood samples showed elevated inflammatory markers.

The chest (figure 1) and abdominal (figure 2) radiographs performed in the emergency department showed right cervical emphysema (arrow in figure 1) but no evidence of pneumoperitoneum.

CT was performed to further clarify the diagnosis, showing subcutaneous emphysema in the cervical region and chest wall (figure 3 and 6) and pneumomediastinum (figure 4 and 6). In the abdomen, CT showed extra-luminal feces associated with voluminous retroperitoneal and a very small pneumoperitoneum (figure 6).

The patient underwent emergency laparotomy, where fecaloid peritonitis, sigmoid colon necrosis and perforation on the posterior wall were found. No palpable masses or significant diverticula were identified. A Hartmann procedure was performed.

Surgery was complicated by an intra-abdominal abscess, which was treated with percutaneous drainage and antibiotics.

The patient was discharged 20 days after the surgery. Histology did not show signs of inflammation or malignancy.
Discussion

Subcutaneous emphysema and pneumomediastinum are rarely found in clinical practice. Most commonly, the air originates from the lungs, larynx, trachea, or esophagus. Rarely, subcutaneous emphysema and pneumomediastinum can occur after perforation of the luminal abdominal organs.1, 7.

This is explained by the continuity of the fascia connecting the subcutaneous cervical tissue, the mediastinum and the retroperitoneum 8, 9. The progression of gas in tissues is determined mainly by pressure gradients, tissue resistance and quantity of gas 10. If the perforation occurs far from the retroperitoneum, a large quantity of air and a high-pressure gradient is necessary for the air to the retroperitoneum and progress to the cervical tissue. Conversely, when perforation...
occurs in the extraperitoneal colon (posterior wall), the air is released to the retroperitoneum and dissests into the mediastinum and cervical region, even with small amounts of pneumomediastinum 2.

Imaging is paramount to confirm the diagnosis and assess local complications. Although chest radiography can identify emphysema and pneumomediastinum, CT is essential to evaluate the perforation location and the air dissection through the various compartments 7.

Aggressive treatment of the colon perforation, either by laparotomy or laparoscopy, and broad-spectrum antibiotics should be pursued due to the high risk of mediastinitis and secondary septic shock 10.

References