Co-occurrence of bilateral pneumothorax and pneumoperitoneum

Junji Ichinose, Yosuke Matsuura, Masayuki Nakao, Mingyon Mun

DESCRIPTION

The most common cause of pneumoperitoneum is a perforated abdominal organ caused by an ulcer, tumour or trauma. Gastrointestinal endoscopy and peritoneal dialysis catheter placement can also cause abdominal free air. Moreover, there are several thoracic causes, including mechanical ventilation, cardiopulmonary resuscitation, pneumomediastinum and pneumothorax.1

We present the case of a man in his 50s who presented with co-occurrence of bilateral pneumothorax and pneumoperitoneum.

A man in his 50s who was a heavy smoker presented with sudden dyspnoea. Five years ago, he underwent chemoradiotherapy for esophageal cancer, and 2 years ago, he underwent esophageal bypass surgery for esophagobronchial fistula. For the procedure, the stomach was brought up to the neck through a retrosternal tunnel. Esophageal bypass surgery was performed through the neck and abdominal incision.

Chest and abdominal radiographies revealed bilateral lung collapse, pleural effusion and free air under the diaphragm (figure 1A). We performed bilateral thoracic tube drainage. CT revealed bilateral pneumothorax and pneumoperitoneum (figure 1B). Furthermore, multiple bullae were found in the bilateral apex. CT revealed defects in the bilateral mediastinal pleura around the lifted stomach (figure 1C). No abdominal symptoms or findings suggestive of perforated abdominal viscus were observed; therefore, we presumed that air leaks from the bullae had penetrated into the abdominal cavity through the mediastinal pleura opening and hiatus around the stomach lifted through a retrosternal tunnel (arrow).

The bilateral pleura appeared open during the esophageal bypass surgery. The clinical conundrum in this case was whether the air leakage occurred from the unilateral lung or bilateral lung; therefore, two-stage surgery is required. The unilateral air leak can cause bilateral pneumothorax in patients with a pleuro-pleural communication. Consequently, the patient presented with bilateral air leaks and required bilateral bullectomy. Several cases of simultaneous pneumothorax and pneumoperitoneum have been reported, but the mechanism of co-occurrence is not well understood.
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pneumoperitoneum occurrence have been reported. Clinicians should recognise that thoracic cavity air can penetrate the abdominal cavity through the pleuro-peritoneal communication, which is either congenital or acquired, especially in patients who have undergone esophageal surgery.

Learning points

- Thoracic cavity air can penetrate the abdominal cavity through the pleuro-peritoneal communication, especially in patients who have undergone esophageal surgery.
- The unilateral air leak can cause bilateral pneumothorax in patients with a pleuro-pleural communication.

Contributors

JI contributed to the planning, data collection, analysis and writing of the manuscript. YM, MN and MM contributed to the review of the manuscript.

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ORCID iD

Junji Ichinose http://orcid.org/0000-0002-3630-5223

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