Massive colothorax secondary to intestinal pseudo-obstruction: an unusual cause of respiratory failure

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CASE SUMMARY
A 75-year-old woman was admitted from a routine orthopaedic outpatient clinic to the emergency department with severe hypoxia. She had recently undergone a right elbow replacement (approximately 2 weeks previously), having sustained a displaced supracondylar fracture of the distal humerus following a fall. Her previous medical history included asthma, hypertension, cervical spondylosis and long-standing large but stable left-sided diaphragmatic hiatus hernia (figure 1A). There was no evidence of prior smoking history, chronic obstructive pulmonary disease, or obesity. On initial assessment, she appeared in extremis with marked respiratory (though not haemodynamic) compromise, distended abdomen and reduced chest expansion with audible high-pitched bowel sounds throughout the left lung field. Arterial blood gas analysis (performed on 15L non-rebreath mask) revealed significant decompensated hypercapnic respiratory failure (pH 7.27, pCO2 13.1 kPa, pO2 13.2 kPa) with associated hypokalaemia (K+ 1.9 mmol/L) but normal lactate (1.0 mmol/L). Urgent chest radiography showed extensive left-sided diaphragmatic herniation with distended colonic loops filling the left hemithorax (figure 1B). Subsequent CT scan of chest, abdomen and pelvis revealed gross dilatation of the entire colon down to the level of the anal canal (figure 2A), with complete collapse of the left lung and associated mediastinal shift (figure 2B). The whole of the stomach and pancreatic tail were also displaced and compressed within the left hemithorax (see figure 2C,D, respectively). There was no radiological evidence of strangulation.

The patient was managed conservatively with intravenous potassium replacement and insertion of a flatus tube, with some initial clinical improvement over the first 48 hours. Unfortunately, she continued to deteriorate over the ensuing days and was considered too unwell to undergo further sigmoid decompression or surgical intervention. A decision was made to adopt a palliative approach and she subsequently died, 8 days after her initial presentation.

DISCUSSION
Colothorax represents a rare complication of diaphragmatic hernia that has previously been associated with life-threatening manifestations, including cardiac tamponade1 and strangulated ischaemic bowel.2 While diaphragmatic hernias are a recognised cause of respiratory failure,3 to our knowledge this is the first report of respiratory failure arising from colothorax in the context of acute intestinal pseudo-obstruction (Ogilvie’s syndrome). Here, the patient’s long-standing, clinically and radiologically stable diaphragmatic hernia was likely compromised by the development of significant bowel distension secondary to severe hypokalaemia and recent joint surgery—risk factors for intestinal pseudo-obstruction.4 The degree of hypokalaemia (which progressed from a value of 2.6 mmol/L in the immediate postoperative period, despite initial correction) is thought to have occurred as a recognised complication of surgical intervention.5 Importantly,
herniation of bowel (and other abdominal viscera) into the thoracic cavity can lead to compression of the lung and subsequent mediastinal shift, which may mimic more common pathology such as pneumothorax. In such cases, urgent cross-sectional imaging may be necessary to avoid unintentional harm (e.g., thoracocentesis). The diagnosis of colothorax and diaphragmatic herniation should be considered within the wider differential of acute respiratory failure, particularly where recent surgery has been performed. Definitive management is by intestinal decompression (which may be achieved percutaneously in refractory cases) and surgical repair of the underlying defect (either congenital or acquired), though was not feasible in this patient owing to the degree of clinical instability.

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