

# Pneumothorax?

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## KEYWORDS

Acute myeloblastic leukaemia, mass effect, noninvasive mechanical ventilation, pneumothorax

## CASE REPORT

A 56-year-old man was diagnosed with acute myeloblastic leukaemia (WHO, M5) and had started on ARA-C for induction treatment. He had been well until he developed this illness, apart from oesophageal cancer some ten years earlier for which he had been cured.

After granulopenia had set in, he developed fever accompanied by slight dyspnoea on exertion. His condition remained stable but his fever did not subside, despite empirical broad-spectrum antimicrobial and antifungal treatment (piperacillin-tazobactam combination and itraconazole). His chest radiograph showed diffuse abnormalities (*figure 1*). He underwent bronchoscopy with bronchoalveolar lavage in an attempt to reach a diagnosis, which he initially tolerated well. Six hours later, however, he developed acute respiratory failure and was admitted to the intensive care unit. His respiratory rate on arrival on the ICU was >40 breaths/min, and despite supplemental oxygen using 60% O<sub>2</sub> rebreathing mask, pulse oxymetric saturation remained poor (SpO<sub>2</sub>, 70 to 80%). As treatment limitation had been agreed based on his prognosis at this early stage of granulopenia, he was treated palliatively by applying a full-face mask (noninvasive) bi-level positive pressure ventilation (BiPAP), combined with intravenous morphine (2 mg/h). He tolerated the mask ventilation well; his respiratory rate gradually came down to 20 breaths/min and his SpO<sub>2</sub> rose to 90%. The chest radiograph now showed a gas configuration in the left hemithorax (*figure 2*).

**Figure 1** Postero-anterior chest radiograph of patient showing the presence of a left subclavian vein access port, with interstitial densities in right middle and upper lung fields; right costo-phrenic filling, probably representing pleural effusion; and left lower lobe consolidation



**Figure 2** Chest radiograph showing a gas configuration in the left hemithorax



WHAT IS YOUR DIAGNOSIS?

See page 336 for the answer to this photo quiz.

## DIAGNOSIS

The second radiograph (*figure 2*) shows a gas configuration reflecting insufflation of the reconstructed gastrointestinal continuity ten years earlier. If this had been a pneumothorax, one would expect mass effects deviating the mediastinal structures toward the right side, or a downward shift of the left hemi-diaphragm, or both. Moreover, the gas configuration had its medial margin at the vertebral column suggesting that it is located posteriorly.

The noninvasive ventilatory strategy combined perhaps with opiates facilitated some gas insufflation into the upper digestive tract with subsequent inflation of the gastric tube.

Noninvasive ventilatory support is a major goal in the management of respiratory failure in immunosuppressed haematological patients, as it has been shown to improve outcome.<sup>1</sup>

Our patient developed respiratory failure some six hours after the bronchoalveolar lavage (BAL). BAL may induce an immediate drop in oxygenation,<sup>2</sup> but also an inflammatory response some three to six hours later.<sup>3,4</sup>

The concern with intensive treatment in haematological malignancies should be to select those patients who will truly benefit from this intervention, as patients with ongoing, progressive respiratory failure with increasing ventilatory pressure demands may not be good candidates for noninvasive mechanical ventilation. Patients with haematological diseases who develop multiple organ failure may have a negligible chance of surviving the acute illness<sup>5,6</sup> and may therefore not benefit from further intensive treatment in the ICU.

Our patient did well and recovered from this acute episode, and could be transferred back to the ward. Eventually, his condition deteriorated, and as there were no plans to treat him actively, further intensive treatment was withheld, and he died after palliative treatment was started.

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