

# Lung Ultrasound Findings in a Patient with Lymphangitic Carcinomatosis

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## Dear Editor,

Lymphangitic carcinomatosis is the malignant infiltration of the lymphatic vessels secondary to metastatic spread of malignancy from a primary—usually breast, lung, and stomach with pulmonary being the common one.<sup>1</sup> Multiple imaging modalities like chest X-ray, CT scan, and positron emission tomography (PET) scan are available for evaluation. But lung ultrasound findings of the same have not been ascertained which may aid the diagnosis in the future, especially in resource-limited settings. Hence, we present the case of a woman with bilateral breast cancer and lymphangitic carcinomatosis.

A female in her 30s presented with complaints of a lump in both breasts for 2 years and dyspnea 3 days. The workup revealed bilateral pleural effusion which was drained. Despite this, her respiratory distress worsened and she was put on mechanical ventilation. She was 12 weeks pregnant at the presentation.

On arrival to the ICU, her ventilatory mechanics were extremely poor, with persistently high driving pressures even after lung protective ventilation and secondary measures like sedation, paralysis, positive end expiratory pressure (PEEP) titration, or prone positioning. Lung ultrasound revealed uniformly thickened pleural lines with occasional shreds with no underlying air bronchograms or no significant B lines (Fig. 1) in all the lung areas. However, no solid pleural anechoic abnormalities were seen.

Pleural fluid analysis was negative for malignant cells. Bronchoalveolar lavage cytology and cultures were repeatedly

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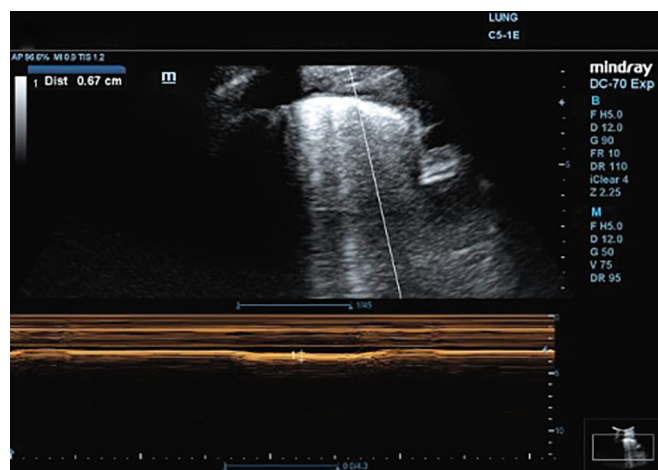
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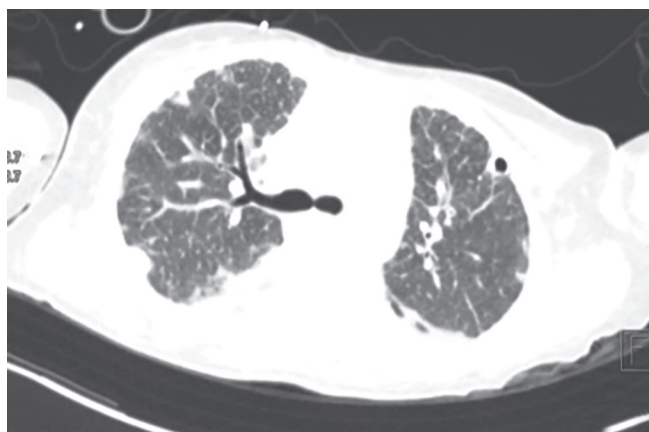
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negative. Biopsy from the breast lumps revealed invasive carcinoma no special type (NST). Contrast enhanced computerized tomography (CECT) thorax revealed thickened enhancing pleura, no pleural nodes, nodular irregular interlobular septal thickening with associated ground glass opacities in the bilateral lung with basal predominance, subpleural nodules, few peripheral areas of patchy consolidation—suggestive of lymphangitic carcinomatosis (Fig. 2).

Radiologic findings of lymphangitis carcinomatosis have previously been described with the chest X-ray being normal in many patients.<sup>2</sup> Although histopathology is the accurate measure to diagnose it, it may not be feasible in many clinical circumstances. Bronchoscopy and lavage may show malignant cytology, but a



**Fig. 1:** Ultrasound image of the pleura with its thickness measured. The pleural thickness was ranging from 0.6 to 0.7 cm



**Fig. 2:** Axial view of CT thorax showing the presence of subpleural nodules with interlobular nodular thickening with few ground glass opacities

negative report does not exclude malignancy as it did with our patient.<sup>3</sup>

Visceral and parietal pleura are normally apposed with a thickness of 0.2–0.3 mm. Pleural thickness >10 mm with underlying effusion, diaphragmatic thickness >7 mm, pleural nodularity predicted malignant pleural effusion with high specificity.<sup>4</sup> The pleural thickness in our patient was significant ranging from 6 to 7 mm in different segments.

A characteristic differentiating feature in CT chest is the preservation of general as well as lobular architecture of the lung, which corroborated with our USG finding of sparing of lung parenchyma.

We believe that the bedside demonstration of uniformly thickened pleura without significant lung parenchymal abnormality on point-of-care ultrasound (POCUS) in the background of a suspected or proven malignancy can help us clinch the diagnosis even when chest X-ray does not reveal significant findings and when cardiorespiratory instability in a critically ill patient can potentially delay CT chest examination.

The overall prognosis of this condition remains poor, and the management involves addressing of the underlying malignancy with chemotherapy and supportive care like steroids. To conclude, in a patient with appropriate clinical history, a lung ultrasound

picture with a thickened pleura should raise the suspicion of malignancy.

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