CHEST

An 80-Year-Old Man With Asbestos Exposure Presenting With Respiratory Distress

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VIDEO

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An 80-year-old male veteran with a history of COPD, peripheral vascular disease, DVT, abdominal aortic aneurysm, gastroesophageal reflux disease, and asbestos exposure presented to the ED with complaint of worsening of his usual shortness of breath on exertion. He was compliant with his medications that included albuterol inhaler, atorvastatin, warfarin, and omeprazole. He was tachypneic, requiring supplemental oxygen, and wheezing, and the rest of his examination and an ECG were unremarkable. We performed a portable bedside ultrasound of the chest to evaluate his dyspnea. A compression ultrasound was also performed and was negative for DVT (Videos 1-5).

Question: Based on the clinical history, physical examination, bedside ultrasound, and videos, what is the most likely differential diagnosis for his dyspnea?

Question: What is the significant finding on the accompanying ultrasound Videos 3-5?

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Answer: The ultrasound videos show a nude or normal profile. It is a shorthand for lung sliding with A-lines in the absence of B-lines, C-profile, pleural effusion, posterolateral alveolar/pleural syndromes, and DVT on lower extremity ultrasound (not shown here). This nude profile is suggestive of COPD or asthma exacerbation in the correct clinical scenario.

Answer: Asbestos-related pleural plaques. The videos show the presence of a well-defined, smooth anechoic space representing a pleural plaque. These are mainly seen over the parietal pleura abutting the posterolateral chest wall and over the diaphragmatic pleura. In addition, the ultrasound also showed evidence of lung sliding, no lung point, and absence of B-lines on both sides.

Discussion

Lung and pleural ultrasonography has gained an important place in the critical care field, providing timely, accurate, and useful information to assess the cause of acute respiratory failure. Bedside lung ultrasound in emergency protocol defines several lung profiles, suggesting a different diagnosis for each pattern in the scenery of acute respiratory failure. All profiles together provide 90.5% accuracy for diagnoses.[1]

In this case, we describe a nude or normal profile, a shorthand for A-profile with no evidence of DVT on lower extremity ultrasound, and no posterolateral alveolar/pleural syndromes, suggestive of COPD or asthma exacerbation in the appropriate clinical scenario (Discussion Video). This normal/nude profile does not mean absence of disease; it means normal lung surfaces commonly seen in bronchial diseases. Normal or nude profile has a 97% specificity and 89% sensitivity, helping us to make the correct diagnosis and most importantly to rule out others.[1]

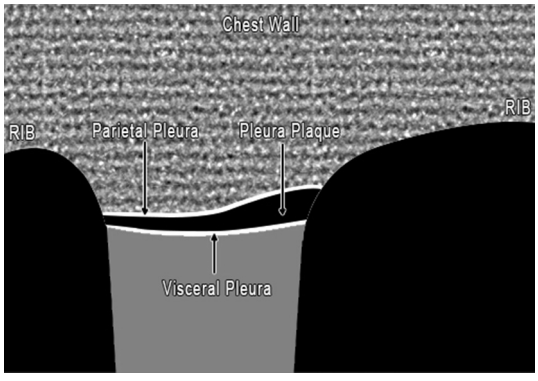

Figure 1 – *Diagrammatic representation of a pleural plaque.*

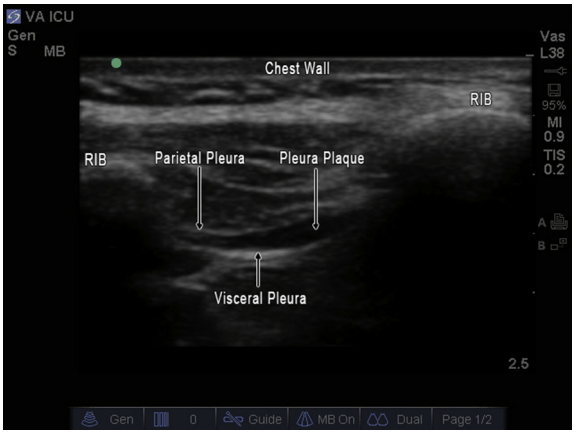

Figure 2 – *Ultrasound appearance of a pleural plaque. A well-defined, smooth anechoic space.*

Pleural plaques are morphologically identified as discrete areas of fibrous tissue that exclusively involve the parietal pleura and also are calcified in 10% to 15% of cases (Figs 1-5). Characteristically located over the posterolateral and over the diaphragmatic pleura, they are an isolated radiologic finding pathognomonic of exposure to asbestos but do not by themselves affect pulmonary function.[2,3] In contradistinction, asbestos-related diffuse pleural thickening affects the visceral pleura rather than the parietal pleural, with fusion to the overlying parietal pleura leading to the restrictive lung pattern.

Asbestos, a set of silicate minerals known for their fire-resistant properties since the 1300s, can cause such

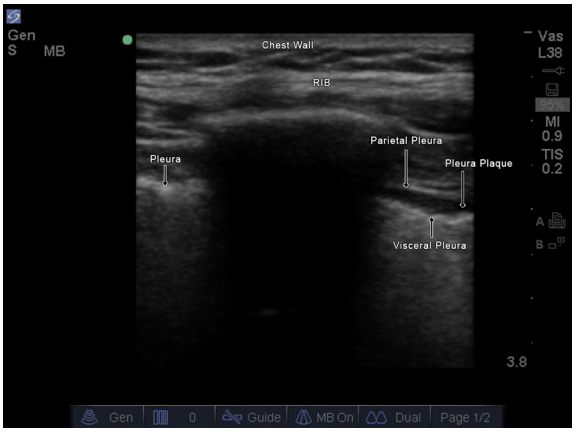

Figure 3 – *Lung ultrasound of two intercostal spaces. Pleural plaque in the right side and a normal space in the left.*