



SCREENING FOR MIXED-ETIOLOGY PLEURAL EFFUSION USING POINT OF CARE ULTRASOUND

Samuel Eglin, MD, Spokane Internal Medicine Residency,
Abby Velarde, MS3, WSU Elson S. Floyd College of Medicine

Elson S. Floyd
College of Medicine

Key Sonographic Features in Pleural Effusion Screening

- **Septations within pleural fluid** have a positive likelihood ratio of 7.33 for exudative processes [1].
- **Pleural thickness >1cm** has a positive likelihood ratio of 8.4 for malignant pleural effusion [2].
- **Echogenic swirling pattern** suggests malignant pleural effusion, but has limited positive likelihood ratio of 2.96 [3, 4].
- **Echogenicity alone** appears to correlate *poorly* to whether an effusion is transudative, exudative, or malignant and *should not significantly influence clinical decision making* [5].

Congestive Heart Failure or Malignant Effusion?

- 87 year old female with history of CHF and known pancreatic head nodule presents with dyspnea.
- Dyspnea resolved with diuresis but on day 3 of admission POCUS showed the following image...
- **Blue Arrows** show fibrinous intra-pleural septations.
- **Orange Arrows** show pleural thickening of approximately 1 cm.
- Based on these findings thoracentesis was performed.
- Pleural fluid cytology revealed metastatic pancreatic adenocarcinoma.

Thoracentesis or More Diuresis?

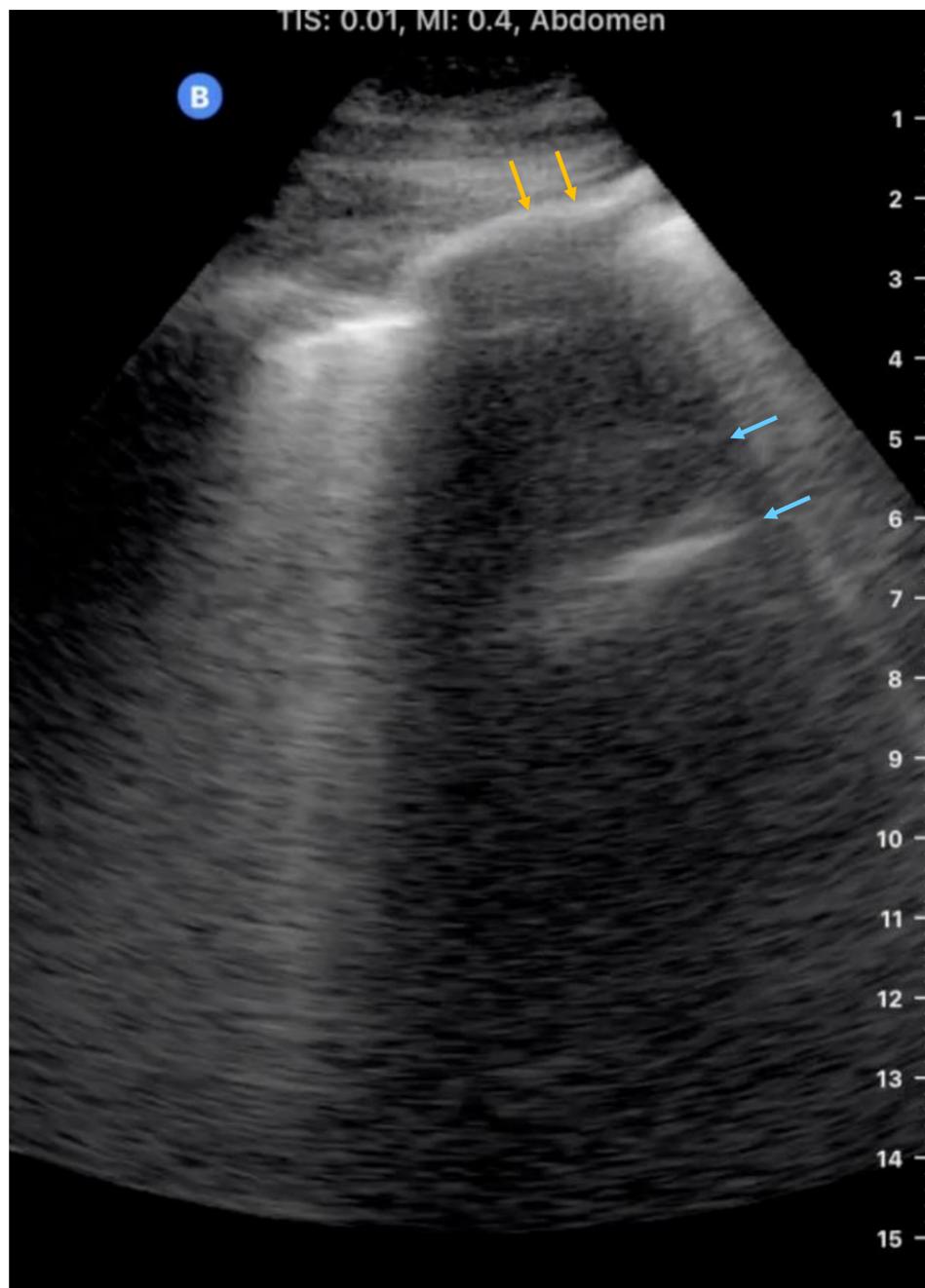


Image Background: Persistent R-sided pleural effusion detected on day 3 of hospitalization following diuresis and resolution of dyspnea.

Points for Clinical Practice

- **Mixed-etiology pleural effusions may mimic transudative effusions**, initially responding to diuresis.
- **Routine screening with POCUS** of inpatient pleural effusions is fast, noninvasive, and cost-effective.
- **Key sonographic features may warrant thoracentesis** even if patient is improving with standard therapy for transudative pleural effusion.
- **Early diagnosis** of mixed-etiology pleural effusions can drastically impact patient's treatment course and disposition.

Sources

1. *Transudative From Exudative Pleural Effusion*. Chest, 2020. **158**(2): p. 692-697.
2. Qureshi, N.R., N.M. Rahman, and F.V. Gleeson, *Thoracic ultrasound in the diagnosis of malignant pleural effusion*. Thorax, 2009. **64**(2): p. 139-43.
3. Chian, C.F., et al., *Echogenic swirling pattern as a predictor of malignant pleural effusions in patients with malignancies*. Chest, 2004. **126**(1): p. 129-34.
4. Chian, C.F., et al., *Echogenic swirling pattern, carcinoembryonic antigen, and lactate dehydrogenase in the diagnosis of malignant pleural effusion*. Sci Rep, 2022. **12**(1): p. 4077.
5. Asciak, R., et al., *Prospective Analysis of the Predictive Value of Sonographic Pleural Fluid Echogenicity for the Diagnosis of Exudative Effusion*. Respiration, 2019. **97**(5): p. 451-456.