

## **Pitfalls of the Use of Lung Ultrasound Acoustic Artifacts for the Fast Diagnosis of Pulmonary Edema**

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Acoustic vertical artifacts (ring down B-lines) commonly found in the lungs by Trans-Thoracic-Ultrasound (TUS) may aid the differential diagnosis of acute pleuropulmonary disorders and were proposed as sensitive and reliable tools within emergency guidelines. The aim of our study is to determine whether US B-lines are different in number in normal vs. dyspneic patients, and whether TUS can discriminate between pulmonary disorders, heart failure and acute pulmonary edema. **Patients and Methods.** TUS was performed in the emergency room in 140 consecutive acute dyspneic patients by experienced physicians and with a standardized approach. Control groups were 193 healthy nonsmokers, sex and age matched, and 58 patients who had undergone pneumonectomy for lung cancer (“empty torax”). Examinations were done with a low-medium frequency (3.5-5.0 MHz) convex probe. Video recordings were reexamined by a second set of examiners to assess inter-operator variability. **Results.** Number of US B-lines were higher in dyspneic patients vs. controls. Subgroups of patients defined by cause of dyspnea displayed no significant differences in the number of these artifacts. **Conclusion.** There is no evidence that quantification of acoustic vertical artifacts (ring down B-lines) during TUS could provide a significant contribution to the differential diagnosis of acute dyspnea. In emergency care, the diagnosis of acute cardiogenic pulmonary edema vs. primary respiratory disorders, acute or chronic, must still rely on more established clinical approaches. The use of TUS by expert physicians, with properly set machines and with a careful upright examination work-up, does not add reliable information on differential diagnosis. A great caution is warranted in relying on this TUS procedure and proposed criteria for differential diagnosis and consequent therapeutic intervention in acute pulmonary edema.