



Letters to the Editor

Use of Thoracic Ultrasound in the Detection of Pneumothorax Resolution after Drainage[☆]

Uso de la ecografía torácica en la comprobación de la resolución del neumotórax tras drenaje

To the Editor,

Pneumothorax follow-up is based on chest radiographs (CR), despite the previously demonstrated poor sensitivity of CR for small volume pneumothorax detection.^{1–3} According to American College of Chest Physicians guidelines, chest tubes should be removed in a staged manner, with most physicians performing a CR before clamping or removing the chest tube.⁴ In spite of these precautions, pneumothorax recurrence rates are as high as 54% within the first 4 years,⁵ and some of these recurrences may be due to residual pneumothorax that was present before clamping or removing the chest tube but overlooked on CR.² In recent years, ultrasonography (US) has emerged as a sensitive, non-invasive procedure for the diagnosis of pneumothorax.^{1–3} However, its routine use in pneumothorax follow-up has not yet been well established. This purpose of this study was to evaluate the effectiveness of US in detecting absence of residual pneumothorax before chest tube removal in comparison with CR.

All patients with pneumothorax requiring drainage admitted to our pulmonology department between April 2014 and October 2015 were consecutively included. The absence of visualization of the pleural line on US for any clinical reason was an exclusion criterion. The primary endpoint was the number of residual pneumothoraces correctly diagnosed by US. No patient was excluded from our study.

US and CR were performed consecutively after bubbling had stopped. In the absence of residual pneumothorax on both US and CR the chest drain was clamped for 24h, then removed and the patient discharged. US was performed by a single chest physician using a 5–13 MHz linear probe with the patient erect. US diagnosis of residual pneumothorax relied on the presence of any of these signs: lung point or abolition of lung sliding; lung pulse or B-lines in B-mode; and absence of seashore sign in M-mode. CR was performed with patient erect and interpreted by the physician in charge of the patient.

Sixteen male patients with unilateral pneumothorax were included (median age, 29 years). Pneumothorax cause was as follows: primary spontaneous ($n = 12$), secondary to pulmonary emphysema ($n = 2$), and iatrogenic ($n = 2$). No residual pneumothorax was diagnosed by US or CR. Thus, chest drains were successfully clamped and removed in all patients, with no pneumothorax recurrence.

Our study showed that US is at least as good as CR in detecting residual pneumothoraces before chest drain removal in a

pulmonology yard setting. A previous study² has showed that US was better than erect CR for pneumothorax follow-up after drainage. This suggests that US might have an important role in pneumothorax management. In reality, US presents some advantages in this matter, such as greater sensitivity, bedside availability, and it has a fast learning curve.²

Because of a predominant ICU/trauma setting of previous studies,^{1,3} the vast majority of published evidence reports to a diagnostic accuracy comparison between supine US and CR. This favours the relevance of our study, which states the usefulness of US in the follow-up of pneumothoraces in a daily practice of a pulmonology yard setting.

Although obviously limited by our sample size, our study showed that US has a good performance in the detection of pneumothorax resolution after drainage.

Authorship

Daniel Coutinho, Maria João Oliveira and Carla Ribeiro conceived the project idea and collected the data. Carla Ribeiro performed the imaging examination. Daniel Coutinho conducted the analyses. All authors interpreted and discussed the results. All authors wrote the manuscript. All authors have read and approved the final version.

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<http://dx.doi.org/10.1016/j.arbr.2017.01.014>

1579-2129/

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[☆] Please cite this article as: Coutinho D, Oliveira MJ, Ribeiro C. Uso de la ecografía torácica en la comprobación de la resolución del neumotórax tras drenaje. *Arch Bronconeumol*. 2017;53:288.