The value of ultrasound in detecting pneumothorax

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Received: 23 August 2010 / Accepted: 22 September 2010 / Published online: 20 October 2010
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To the Editor,

We read with interest the recent article, *Ultrasound guidance for internal jugular vein cannulation*, by Drs. Ayoub *et al.*¹ that appeared in the May 2010 issue of the *Journal*. There are a number of points that we believe deserve emphasizing, for example, an absent sliding lung sign, although highly suggestive, is not diagnostic of a pneumothorax.^{2,3} When associated with A-lines, it should trigger a search for the lung point sign,³ which, if present, confirms an incomplete pneumothorax.

The absence of a lung point sign requires other diagnostic modalities to confirm a diagnosis.³ Other causes of absent sliding lung (e.g., acute respiratory distress syndrome, severe pneumonia, apnea, complete atelectasis, endobronchial intubation, pleural adhesions, high frequency ventilation) and the low prevalence of pneumothorax contribute to its lack of diagnostic certainty. From a purely statistical point, using a prevalence of 0.2%⁴ and a positive likelihood ratio of 121⁵ translate into a post-test probability of about 20% for a pneumothorax.

Sudden loss of B-lines or a sliding lung (as opposed to their absence) have been reported in cases of pneumothorax, although the evidence for these occurrences comes from case reports and small case series.⁶ This incident, however, makes a pre-procedural chest scan an attractive proposition. A pneumothorax may be ruled out in the horizontal supine patient by the presence of anterior lung sliding. In the absence of a sliding lung, a complete pneumothorax may be ruled out by the presence of B-lines.⁷

This article has no financial or non-financial affiliation and was not funded by any source.

Competing interests None declared.

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Reply

We totally agree with the comment of Drs Verniquet and Kakel that the absence of a sliding lung is compatible but not necessarily diagnostic of a pneumothorax. In the article, we mentioned that the absence of a sliding lung sign “has been proven effective in detecting the presence of a pneumothorax”. This phenomenon would be particularly useful if the sliding lung were present before the procedure

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and then absent after vascular access was performed. The major utility of the sliding lung is its negative predictive value, which approaches 100% in some studies. Therefore, if a sliding lung is present, pneumothorax can be almost ruled out. The presence of B-lines (comet-tail artifacts) or a lung pulse (cardiac transmission on the pleura) can also be used to rule out a pneumothorax. Consequently, their disappearance could also suggest this diagnosis. When performing echo-guided vascular access, the key element or message is that ultrasound can also be used to obtain critical information that is highly relevant to

anesthesiologists. Lung ultrasonography is an area of significant interest for anesthesiologists, and we do share this point with Drs Verniquet and Kakel.

Funding This article has no financial or non-financial affiliation and was not funded by any source.

Competing interests None declared.

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