Handheld US Confirms Endotracheal Tube Placement

Confirmation of proper endotracheal tube (ETT) placement is critical and can be especially challenging in nontraditional settings with insufficient lighting and excessive noise. Researchers assessed whether a portable handheld ultrasound machine could be used to assess ETT position.

Fifteen patients (13 who underwent intubation for elective surgery and 2 involved in a separate trauma study) were examined with a high-frequency 10-5-MHz linear array transducer and a 2.4-kg handheld US unit during and after intubation. The visceral-parietal pleural interface was assessed by placing the transducer between the third and fourth intercostal spaces of both hemithoraces to determine presence or absence of lung sliding (with enhanced depiction by color-power Doppler) and comet-tail artifact signs. Images were adequate in all patients. US confirmed correct tube placement in all 13 elective-surgery cases. In the 2 trauma patients, lack of pleural signals in the left chest indicated right mainstem tube placement; the signals returned after the tube was repositioned.

Comment: Ultrasonography is playing an ever-increasing role in emergency medicine, and this study demonstrates yet one more creative use of this tool. A larger study is needed to confirm these preliminary results, and US confirmation might be superfluous in modern emergency departments, where direct visualization of the tube passing through the cords and end-tidal carbon dioxide detection remain the standard of care. It is possible that this new technology holds promise for use under austere conditions, where auscultation can be logistically difficult, but it is hard to imagine an operator-dependent procedure like US replacing simple capnometry.

— Kristi L. Koenig, MD, FACEP

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