Ultrasound performs better than radiographs

We applaud the British Thoracic Society (BTS) for its efforts to improve patient care through scientific evidence. We thus recognise the recent guidelines on pleural procedures and thoracic ultrasound (TUS) as an important attempt to develop a rational approach to chest sonography. However, we are concerned that the BTS has reached conclusions based on a less complete review of TUS.

The guidelines state that ‘the utility of thoracic ultrasound for diagnosing a pneumothorax is limited in hospital practice due to the ready availability of chest x-rays (CXR) and conflicting data from published reports’. This conclusion appears to be based on a small (but landmark) study of 11 patients from 1986 to 1989, two small studies with only four pneumothoraces in one and another small series whose ultrasounds were retrospectively reviewed. Against these small and somewhat dated studies, a large number of recent investigations support a quite different conclusion.

Many well-performed retrospective reviews and a number of prospective studies have compared TUS to chest radiographs (CXR) in the detection of pneumothoraces, we feel that only prospective studies utilising CT as the reference criterion are valid to assess the relative merits of ultrasound versus radiography. Although methodology and populations have varied, at least nine comparative trials, conducted in the last decade, have noted a higher sensitivity for TUS than CXR in the detection of pneumothorax. While the widely reported positive likelihood ratios of greater than 10, many, including the authors of two systematic reviews, that TUS is a more accurate test than supine anteroposterior CXR for the detection of pneumothorax. Finally, we would also like to take issue with the assumptions underlying the phrase ‘ready availability of chest x-rays’. For many critical care and emergency department patients with sudden unexplained dyspnoea, the delay involved in obtaining a ‘stat’ portable CXR can be lethal. For such patients, bedside TUS may allow for rapid initiation of life-saving interventions.

We are keenly aware that TUS has pitfalls, and that its use requires due caution by properly trained sonologists. However, recognising that guidelines are living documents reflecting best evidence, we respectfully submit that the BTS guidelines in question are thus somewhat incomplete. In our view, after further review and consensus development according to the GRADE criteria, data reported from the 21st century, far from being conflicted, provide strong and consistent evidence regarding the superiority of sonography over CXR in the diagnosis of pneumothorax (see online supplement).

The World Interactive Network Focused on Critical Ultrasound (WINFOCUS) International Liaison Committee on Pleural and Lung Ultrasound (ILCPLUS) is constituted by experts in pleural and lung ultrasound and clinical epidemiology experts in the process of evidence assessment, including GRADE and RAND Appropriateness Methodologies for the development of evidence-based clinical recommendations and consensus statements.


REFERENCES

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