CORRESPONDENCE

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Letter to the editor: Post-thoracocentesis chest radiograph – is it time for a change in practice?

The Editor,

It appears to be common practice and almost customary for clinicians to request a chest radiograph following diagnostic or therapeutic thoracocentesis. Understandably, this is done to exclude complications that can occur as a result of the procedure; however, a critical look into this reveals a range of unresolved issues.

Firstly, routine chest radiographs are usually requested to exclude the most likely complication following thoracocentesis *i.e.* pneumothorax. It had a 6% incidence following thoracocentesis in a recently published systematic review and meta-analysis [1] and an incidence of between 3% and 20% in a previous study [2]. 1.7% of all patients following thoracocentesis and 34.1% of those with demonstrated pneumothorax require chest tube insertion [1]. A retrospective audit conducted in our institution (Derriford Hospital, Plymouth, UK) yielded similar results whereby the incidence of post-thoracocentesis pneumothorax was 5% with none requiring tube drainage. The indication for a chest radiograph was to exclude pneumothorax in all cases (Table 1). Pneumothorax is a much feared complication; however, it does not occur in the majority of patients and, when it does occur, about two-thirds of patients will not require further intervention. Important factors that should be taken into consideration as possible predictors of pneumothorax include symptoms such as pleuritic chest pain, cough and shortness of breath during or after thoracocentesis, aspiration of air during the procedure and patients undergoing mechanical ventilation.

Secondly, thoracocentesis under ultrasound guidance has been shown to be associated with lower occurrence of pneumothorax and is identified as the “most important strategy to reduce pneumothorax rates” [1]. Although it is safer to perform thoracocentesis under image guidance, the

feasibility and impact on service delivery cannot be ignored, leading to wider unresolved issues. If radiologists are expected to perform all ultrasound-guided thoracocentesis, the pros and cons need to be carefully thought through.

Apart from lowering the occurrence of pneumothoraces, there is also the opportunity for trainee radiologists to acquire generic skills such as familiarity with ultrasound scanning and image interpretation applicable to a career in general or interventional radiology. However, it will increase the current workload and will probably require service expansion. The possibility of delay before a diagnosis is made has to be entertained if this becomes a planned procedure, which might not be acceptable, especially for urgent cases such as cases of suspected malignancy where prompt diagnosis is crucial. If non-radiologists embrace this to reduce pneumothorax rates, adequate training of the use of ultrasound guidance has to be taken more seriously.

There are currently no clinical guidelines, which has led to varying practices across various institutions. Recognition of patients who will benefit from routine chest radiographs will not only avoid unnecessary exposure to radiation but also foster a more efficient and cost-effective use of limited resources. On balance, routine chest radiographs is clearly not indicated in all patients following diagnostic or therapeutic thoracocentesis. Results from various studies over the past decade do not support routine chest radiographs following all thoracocentesis [3–5]. Ultrasound-guided thoracocentesis is undoubtedly beneficial and needs to be incorporated into well designed clinical guidelines, which are long overdue to maintain efficient service provision.

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Table 1. Results of a retrospective audit of post-thoracocentesis chest radiographs at Derriford Hospital, Plymouth, UK

Number of patients	80
Duration	December 2009–February 2010
Male:Female	42:38 (53%:47%)
Age range (average)	18–99 years (71.9)
Percentage of diagnostic thoracocentesis	58% (46/80)
Percentage of therapeutic thoracocentesis	42% (34/80)
Indication for post-thoracocentesis CXR	To exclude pneumothorax in all cases
Incidence of pneumothorax	5% (4/80)
Percentage of pneumothoraces requiring drainage	0%

CXR, chest radiograph.

References

- Gordon CE, Feller-Kopman D, Balk EM, Smetana GW. Pneumothorax following thoracocentesis: a systematic review and meta-analysis. *Arch Intern Med* 2010;170:332–9.
- Aleman C, Alegre J, Armadans L, Andreu J, Falco V, Recio J, et al. The value of chest roentgenography in the diagnosis of pneumothorax after thoracocentesis. *Am J Med* 1999;107:340–3.
- Pihlajamaa K, Bode MK, Puimalainen T, Lehtimäki A, Marjelund S, Tikkakoski T. Pneumothorax and the value of chest radiography after ultrasound-guided thoracocentesis. *Acta Radiol* 2004;45:828–32.
- Molina Hinojosa JC, Auguet Quintillá T, Olona Cabases M, Aguilar Bargalló X, Veloso Esteban S, Richart Jurado C. Is the routine chest radiography following thoracocentesis necessary? *Rev Clin Esp* 2003;203:125–8. [In Spanish.]
- Petersen WG, Zimmerman R. Limited utility of chest radiograph after thoracocentesis. *Chest* 2000;117:1038–42.