

lesson of the month (1)

Chest drain insertion in pleural effusion

Chest drain insertion may have unintended consequences; this procedure should only be carried out when there are clear indications to do so.

Lesson

A 60-year-old Australian woman presented to a UK hospital with progressive breathlessness over a two-week period. Clinical examination and chest radiograph revealed a large right-sided pleural effusion. A chest drain was inserted and the patient was referred to respiratory medicine.

Past medical history included ovarian carcinoma treated with chemotherapy in Australia earlier in the year. She had been admitted to another UK hospital a few weeks earlier, again with a right-sided pleural effusion. This had been treated by simple aspiration without drain insertion and a cytology specimen taken at that time was suspicious for a poorly differentiated carcinoma. The sample was not sufficient to confirm metastasis from the ovarian cancer, or to exclude a second primary.

The patient wished to fly back to Australia to receive any further treatment. In view of this the chest drain was removed. Unfortunately a computed tomography scan of the thorax following drain removal demonstrated a small, apical pneumothorax which was assumed to be iatrogenic in origin. A referral was made to a thoracic surgeon for thoracoscopy to establish a definitive diagnosis and to achieve pleurodesis.

Table 1. Indications for chest drain insertion.

Some pneumothoraces, eg tension pneumothorax, pneumothorax in an artificially ventilated patient, large pneumothorax resistant to simple aspiration or in a patient with underlying lung disease
Empyema and complicated parapneumonic effusion
Traumatic pneumothorax or haemothorax
Postoperative, eg post-thoracotomy
Malignant effusion in order to effect a pleurodesis

Iain Crossingham, Specialist Registrar in Respiratory and Intensive Care Medicine, Trafford General Hospital; **Simon Taggart**, Consultant in General and Respiratory Medicine, Salford Royal NHS Foundation Trust

Discussion

Chest drain insertion should generally be avoided in undiagnosed pleural effusions. Breathlessness can normally be managed by simple aspiration of 1–1.5 litres of pleural fluid. The presence of a chest drain may hinder further diagnostic procedures, such as pleural biopsy and medical thoracoscopy. Chest drain insertion requires a hospital admission which may otherwise have been unnecessary and limits the patient's subsequent mobility in hospital.

The procedure may be appropriate after malignant pleural effusion has been confidently diagnosed. However malignant effusions should not usually be treated with chest tube drainage alone, because it leads to an unacceptably high rate of recurrence.¹ Pleurodesis may be achieved via a chest drain, though thorascopic procedures have a higher success rate and should generally be preferred if available locally.²

Chest drain insertion is not a benign procedure. Even in expert hands more than 10% of insertions have some manner of untoward complication.³ Given the concerns raised over the standard of training in chest tube insertion it is vital that unnecessary procedures are avoided.⁴ Genuine indications for chest drain insertion are given in Table 1.⁵

In this patient, chest drain insertion was complicated by a small pneumothorax, a contraindication to air travel. Our patient's travel plans, and her further treatment in Australia, would not have needed to be delayed if her effusion had been treated with simple aspiration pending a definitive diagnostic procedure once she had returned home. Before inserting a chest drain, clinicians should ask themselves why a chest drain is preferred over simple aspiration.

References

- 1 Antunes G, Neville E, Duffy J, Ali N. BTS guidelines for the management of malignant pleural effusions. *Thorax* 2003;58:29–38.
- 2 Shaw P, Agarwal R. Pleurodesis for malignant pleural effusions. *Cochrane Database of Systematic Reviews* 2004;(1):CD002916.
- 3 Collop NA, Kim S, Sahn SA. Analysis of tube thoracostomy performed by pulmonologists at a teaching hospital. *Chest* 1997;112:709–13.
- 4 Griffiths JR, Roberts N. Do junior doctors know where to insert chest drains safely? *Postgrad Med J* 2005;81:456–8.
- 5 Laws D, Neville E, Duffy J, on behalf of the British Thoracic Society Pleural Disease Group, a subgroup of the British Thoracic Society Standards of Care Committee. BTS guidelines for the insertion of a chest drain. *Thorax* 2003;58(Suppl II):ii53–ii59.

Address for correspondence: Dr I Crossingham, Trafford General Hospital, Moorside Road, Urmston, Manchester M41 5SL. Email: irc@doctors.org.uk