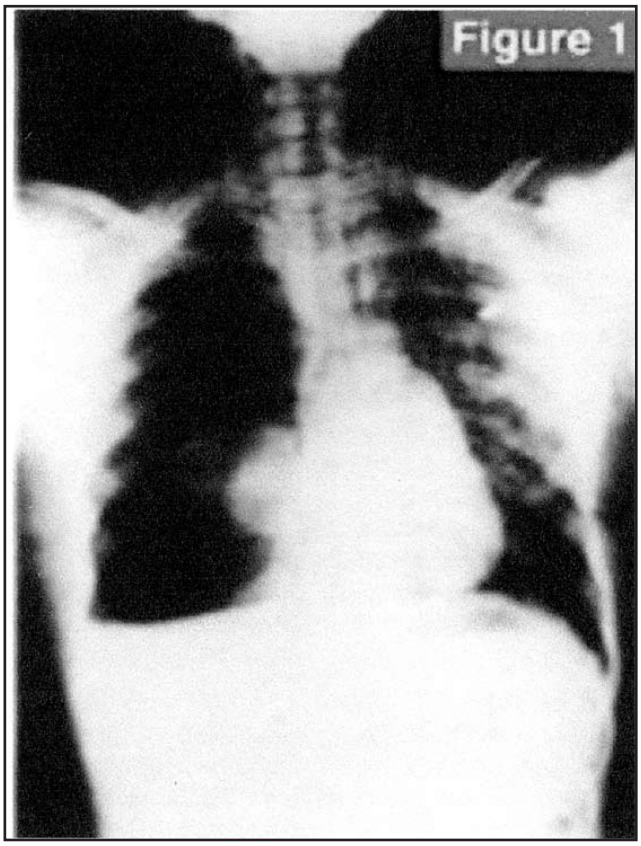
CLINICAL DILEMMAS



You are asked to anaesthetise a 30, year old man who has been involved in a road traffic accident. He requires a laparotomy for a suspected ruptured spleen. In your preoperative assessment you notice that he is dyspnoeic (breathless) and has reduced air entry on the right side. His chest X ray is shown in figure 1.

Questions
1. Why is he dyspnoeic?
2. Why is his problem important to the anaesthetist?
3. What would you do about it?

Answers
1. The patient is dyspnoeic because he has a tension pneumothorax. The X-ray shows the compressed outline of the right lung and an absence of normal lung markings in the right side of the chest. The mediastinum has been pushed over to the left. Air is also seen in the mediastinum and in the soft tissues of the neck and chest wall.

2. A tension pneumothorax makes normal respiration impossible and causes hypoxia. It also causes a shift of the mediastinum and a severe reduction in cardiac output and blood pressure due to impaired venous return to the heart. Under anaesthesia a pneumothorax may rapidly increase in size, particularly with the use of intermittent positive pressure ventilation or nitrous oxide (which difruses into the pleural space). A small asymptomatic pneumothorax may rapidly develop into a life threatening tension pneumothorax during anaesthesia.

3. Insert a chest drain with an under water seal prior to induction of anaesthesia.

Comment
A pneumothorax may be diagnosed clinically by the signs of reduced air entry and an increased or "hyper-resonant" percussion sound on the affected side. It should always be suspected in patients who have had a chest injury and is best confirmed by a chest X-ray. It may be difficult to diagnose during anaesthesia, but if missed may rapidly progress and may be fatal. Always suspect the diagnosis in patients at risk of pneumothorax, and remember it may present in the anaesthetised patient as hypotension which is caused by the developing tension in the pleural space. Because of these difficulties most anaesthetists will insert a chest drain before induction in any patient with fractured ribs who requires anaesthesia. In an emergency situation where a chest drain is not readily available, a wide bore needle may be inserted into the pleural cavity to relieve a tension pneumothorax.

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