

A simple pneumothorax?

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Emergencies can spring up at any time and in many incarnations. Are you adequately equipped to deal with them? Each month we present a case study in emergency medicine based on real cases and events. Would you have been able to help this patient?

You are a GP doing your regular shift in the emergency department of your local hospital. According to the screen of waiting patients, the next patient to be seen has been classified as a category 3. This means the problem is not life-threatening and the patient can be seen in 30 minutes. Subconsciously you feel a bit more at ease because, as a GP, you still worry about the critically ill patients in spite of all the support that is readily available in the emergency department.

The patient

From the triage nurse's assessment you see that the patient is a 24-year-old man who has had left-sided chest pain for the last two days on a background of recurrent pneumothoraces. It is noted that he is in no distress, and is able to walk and talk freely.

The patient is in the waiting room. You open the security door and call out his name. A pleasant young man stands up and hands the baby girl he is holding

to his wife, who puts her into a large stroller, typical of one for the first child.

You prefer to see key relatives at the same time as the patient because it saves time explaining matters later, it often gives you more information and, as the healthcare system slides backwards, it gives you another pair of hands to do small tasks. You tell the family not to rush, and make sure the patient is happy to have his wife present.

The history

As often occurs, the patient starts by saying he did not want to come to hospital but his wife made him. You respond by saying we should be grateful for those who care for us.

It turns out that he has been blowing up long sausage balloons for the baby – the balloons that can be twisted into figures and animals. His wife says she told him not to. On blowing up the last bit of one of these balloons, which can be hard, he felt a pain in his left shoulder blade area similar to his previous pneumothoraces, although not as bad. He also noticed some shortness of breath, but only on exertion. He went to work, an office job, as usual.

His past health is unremarkable apart from the recurrent pneumothoraces. These had been mainly on the right until a pleurodesis 18 months ago; he has had none since then. He is vague about the operative details but remembered he had

been tested for α_1 -antitrypsin deficiency and it was negative.

His lifestyle is normal, and he does not smoke. There is little to find on examination, including chest expansion, percussion note and auscultation. His observations, including respiratory rate and pulse oximetry, are all unremarkable.

You send him for a chest x-ray.

Management options

While waiting you discuss the management of pneumothoraces with the duty emergency medicine consultant. There are several options, and local colour. The consultant says that a traumatic pneumothorax must always get a chest tube, no matter how small the pneumothorax – this is not negotiable. A few examples of near disasters are offered.

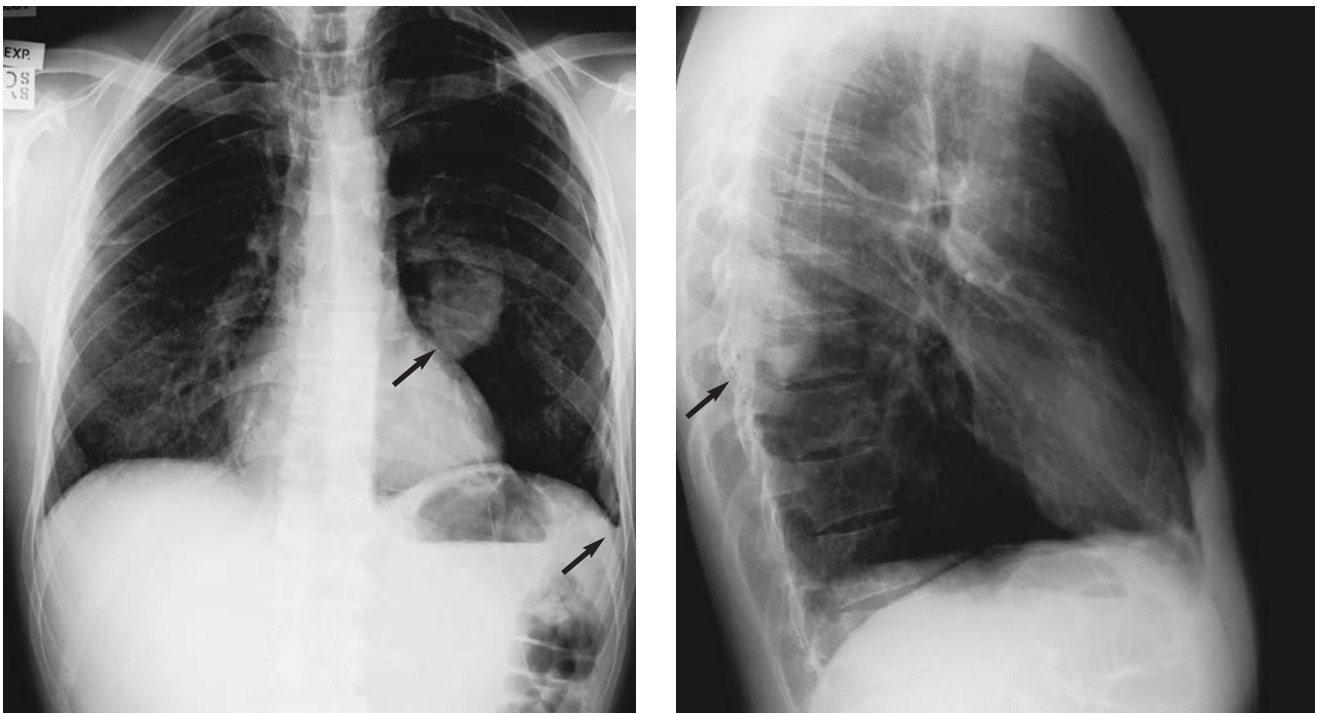
The options available depend on the clinical symptoms, the specific patient's conditions and the estimated size of the pneumothorax. All of the techniques have proponents and literature to support them.

Very few doctors do a needle aspiration for a small pneumothorax, opting instead for a short period of observation and then discharge with follow up. In patients with no breathlessness, a pneumothorax of some 10 to 20% of the lung field is most often treated conservatively. The patient and carer are fully briefed about what to watch for (increased pain, breathlessness), what not to do (plane travel, diving, coughing) and how to access care immediately.

In patients with significant symptoms and a 10 to 20% pneumothorax, the use of narrow bore flexible intercostal catheters is popular. These catheters look a bit like a central venous line but are shorter. They are easy to insert and leave only a puncture wound scar. Sometimes they are aspirated, but usually they are just put on an underwater seal set-up. The patient spends a day or so in hospital before being discharged.

Formal drainage of pneumothoraces

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Figures 1a and b. Posteroanterior (left) and lateral (right) chest x-rays showing a small apical left pneumothorax and an area of possible consolidation, haematoma or lung contusion in the left hilar region, which turned out to be a calcified mass associated with a talc pleurodesis.

with a large bore (28 to 32 gauge French) intercostal catheter is a proper procedure done through the axilla and the triangle of safety. The pointed metal introducer is always withdrawn before putting it through the skin, as mishaps easily occur if it is left in. Such a procedure would be performed to drain a larger pneumothorax or blood, for example.

Like many procedures nowadays, catheter insertion is now largely done in the emergency department rather than in the wards, as that is where the sick patients generally arrive for treatment.

The outcome

The posteroanterior x-ray comes back (Figure 1a). You put it on the screen and go through your routine, checking the name and so on. You quickly focus on whether there is a possible pneumothorax. You try to follow the lung markings towards the apex, finding a small apical left pneumothorax but no clear

line of apical pleura. There seems to be an area above the diaphragm with a small effusion in the left costophrenic angle (detected by comparing the fluid meniscus with the right side).

In addition, there is a small kidney-shaped shadow in the left hilar region. At first it looks like a collapsed lung, but no-one in the group of doctors that has gathered is sure. The formal verbal report calls it patchy collapse consolidation. The staples visible on the right are from the previous pleurodesis.

You send the patient back for a lateral chest x-ray (Figure 1b). Once again you see something you do not recognise. The group of doctors offers a list of anatomically based possibilities. You think it is an encysted pleural effusion. The formal report later calls it a possible haematoma or lung contusion.

The patient is happy with the recommended conservative therapy. He returns in two days for a progress chest x-ray,

which shows a decrease in the size of the pneumothorax.

Further review

Soon after this, the patient is reviewed by a cardiothoracic surgeon to discuss possible pleurodesis as well as to further investigate the mass that is visible on both x-ray views. A CT scan suggests the mass may be vascular in nature and the surgeon thinks it may be an aneurysm of an intercostal artery.

At operation, thorascopic pleurodesis with talc, it turns out that the mass is a calcified mass presumably connected with a previous talc pleurodesis. Apparently the patient had previously had a pleurodesis done on his left side as well as the right.

The patient did well and has not had problems since.

You enjoyed this case not only because of the pleasant patient and a good result but also because it showed that medicine is often, in spite of all its tests, not a precise science.

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