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## PICTURE QUIZ A 64 year old woman with headache and breathlessness

A 60 year old woman presented to the chest clinic with four years of worsening dyspnoea. On waking she felt unrefreshed and had a headache. She felt sleepy throughout the day. Her medical history included kyphoscoliosis, spina bifida, hypertension, and osteoporosis. The drugs she was taking included amiloride, furosemide, nitrazepam, and calcium-vitamin D supplements. She was born in the United Kingdom, was a lifelong non-smoker, and a retired teacher. She owned no pets and reported no exposure to asbestos.

On physical examination, her respiratory rate was 28 breaths/min and oxygen saturation was 86% on ambient air. Temperature and haemodynamics were normal. General inspection showed marked kyphosis and rapid shallow breathing. She had a global reduction in breath sounds but no crackles, wheeze, or rub. The rest of the examination was unremarkable, with no evidence of right heart failure.

Blood tests showed a raised haemoglobin of 157 g/L (reference range 115-165), but other haematological, biochemical, and inflammatory markers were normal. Arterial blood sampling on ambient air showed pH 7.36, arterial carbon dioxide tension 9.14 kPa, arterial oxygen tension 6.4 kPa, base excess 7.8, and bicarbonate 33 mmol/L. Her body mass index was within the normal range. The figure shows the chest radiograph.

- 1 What is the primary abnormality on the chest radiograph?
- 2 Why would this abnormality cause her symptoms?
- 3 What investigations would you perform to evaluate the underlying disorder?
- 4 How should she be managed?

Submitted by Robert Lord, William Flight, Alan Sweeney, and Nauman Chaudhry  
Cite this as: *BMJ* 2012;344:e3158

## CASE REPORT Acute skin failure

A 54 year old man with a history of alcohol related polyneuropathy, depression, and carcinoma of the vocal cord who had recently finished a course of radiotherapy presented to his general practitioner because of a sore throat and mouth. He was prescribed amoxicillin 1 g twice daily (he had received this antibiotic three months before for a throat infection). He had also been taking prednisolone (20 mg daily) and fentanyl patches (25 µg/hour) for two months, lamotrigine (50 mg daily) and clonazepam (1 mg three times daily) for five months, and paroxetine (10 mg daily) for two years. These treatments had not recently been modified. Five days later, he was admitted to the general medical ward with fever and a rapidly spreading burning skin rash that affected his face, the presternal region of his trunk, and his palms and soles. He also had painful red eyes with yellow discharge and a worsening of the inflamed ulcerations inside his mouth.

Initially the rest of the physical examination was unremarkable, apart from tachycardia (120 beats/min), with no signs of organ dysfunction. The next day, his skin symptoms had worsened: blisters appeared and the top layers of skin on his chest came off when lightly rubbed. At the same time he fell into a stupor and experienced respiratory failure; intubation and mechanical ventilation were required. He was transferred to the intensive care unit (tertiary referral hospital).

- 1 What is your diagnosis?
- 2 How can you confirm the diagnosis?
- 3 What are the main causes of such a cutaneous disorder?
- 4 How can it be managed?
- 5 What are the main complications?

Submitted by Mary-Jane Guerry and Malcolm Lemyze

Cite this as: *BMJ* 2012;345:e5028

## STATISTICAL QUESTION

### Why randomise in clinical trials?

Researchers evaluated the efficacy of a 23-valent pneumococcal polysaccharide vaccine in preventing pneumonia in people at high risk. A randomised, placebo controlled, double blind trial was used. A total of 1006 nursing home residents in Japan were recruited. Participants were randomly allocated to 23-valent pneumococcal polysaccharide vaccine (n=502) or placebo (n=504). All participants were followed for at least 26 months.

The primary endpoints were the incidence of all cause pneumonia and pneumococcal pneumonia. The researchers reported that all cause pneumonia and pneumococcal pneumonia were both significantly more frequent in the placebo group than in the vaccine group: the incidence per 1000 person years was 91 versus 55 (P<0.0006) and 32 versus 12 (P<0.001), respectively.

Which of the following, if any, did random allocation of participants facilitate?

- a) Minimisation of allocation bias
- b) Minimisation of confounding
- c) Minimisation of selection bias
- d) Double blinding
- e) Minimisation of ascertainment bias

Submitted by Philip Sedgwick

Cite this as: *BMJ* 2012;345:e5584