PICTURE QUIZ

Management of ankle fractures

A 73 year old woman presented to the accident and emergency department after having fallen down a flight of stairs near her local shops. She had not injured her head; lost consciousness; or had a preceding event, such as chest pain, shortness of breath, or dizziness. After her fall she sustained a closed injury to her left ankle, which was swollen and painful to palpation over both malleoluses. She was also unable to bear weight on her left ankle. Her medical history included hypertension, hypercholesterolaemia, and osteoporosis. She had undergone hemiarthroplasty for a fracture to the neck of the right femur 10 years ago. She lived with her husband in a bungalow and was fully independent in activities of daily living, using a stick to mobilise. She was an ex-smoker and did not drink. The anterioposterior and lateral radiographs on admission are shown below (figs 1 and 2).

Fig 1 | Anterioposterior radiograph on admission
Fig 2 | Lateral radiograph on admission

1 When should a radiograph be ordered after an ankle injury?
2 From the radiographs how would you classify this type of injury?
3 How would you manage this woman acutely?
4 How would you definitively manage this injury?

Submitted by Simon Mordecai and Nawfal Al-Hadithy

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CASE REPORT

Diagnosis and management of the solitary pulmonary nodule

A 67 year old woman presented with a worsening cough and a two month history of a small amount of blood in her saliva. She had no history of weight loss, pleuritic pain, or constitutional symptoms. In addition, she had shortness of breath secondary to chronic obstructive pulmonary disease, and she was on supplemental oxygen at home. Her medical history included myocardial infarction, moderate to severe peripheral vascular disease, and type 2 diabetes. She continued to smoke one pack of cigarettes a day and had a cumulative 130 pack year history of smoking.

Chest radiography showed a 2.7 cm single pulmonary nodule in the right middle lobe adjacent to the mediastinum. The lesion was confirmed to be non-small cell lung carcinoma by a computed tomography guided lung biopsy. As part of the staging process, a positron emission tomography-computed tomography (PET-CT) scan was done, which confirmed a malignant right middle lobe lesion, stage IA (T1b), with no nodal or pleural involvement.

Pulmonary function testing showed that an operative resection would not be suitable. Treatment options were combined chemoradiotherapy and percutaneous ablation. Percutaneous radiofrequency ablation was performed, and the post-procedural PET-CT scan at one year showed no clinically relevant residual disease.

1 What is the most common clinical presentation of lung cancer?
2 What are the indications for biopsy of a lung mass?
3 What is the value of a PET-CT scan in investigating a lung nodule?
4 What are the current management guidelines for non-resectable non-small cell lung carcinoma?

Submitted by Graeme Weir, Sebastian Kos, Josh Burnill, Peter Salat, Stephen Ho, and David Liu

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STATISTICAL QUESTION

Standard deviation versus standard error

Researchers investigated the effectiveness of a weight loss programme in men with moderate to severe obstructive sleep apnoea. Men were eligible to join the programme if aged 30-65 years, had a body mass index between 30 and 40, had moderate to severe obstructive sleep apnoea (as measured by an apnoea-hypopnoea index ≥15 events/hour), and were being treated with continuous positive airway pressure. The weight loss programme lasted one year and consisted of a very low energy diet for nine weeks followed by a weight loss maintenance programme. A total of 63 men were recruited at an outpatient obesity clinic in a university hospital in Stockholm, Sweden.

Outcome measures included the change in body weight after participation in the weight loss programme. At baseline the sample had a mean weight of 113.1 kg (SD=14.2 kg). The researchers reported that the weight loss programme resulted in a significant decrease in weight. The mean change in body weight at one year from baseline was a reduction of 12.1 kg (95% confidence interval 9.8 to 14.3) (SD=9 kg; SEM=1.13 kg).

Which of the following, if any, are true?

a) The standard deviation of body weight at baseline provides a measure of the spread of observations of weight in the sample before participants began the weight loss programme.
b) At baseline, approximately 95% of sample members had a body weight that was within two standard deviations of the sample mean.
c) The standard error of the mean change in body weight at one year provides a measure of precision of the sample mean as an estimate of the population parameter.
d) After one year on the weight loss programme, 95% of the population would have a reduction in body weight between 9.8 kg and 14.3 kg.

Submitted by Philip Sedgwick

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