ENDGAMES

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PICTURE QUIZ An ominous cough

A 55 year old woman with bronchiectasis, lobe sequestration, and recurrent respiratory infections failed to respond to medical treatment. Pulmonary function tests showed forced expiratory volume in one second of 2.3 l (85% of predicted) and diffusion lung capacity for carbon monoxide (a test of the integrity of the alveolar-capillary surface area for gas transfer) of 5.56 mmol/min/kPa (66% of predicted). She underwent right lower lobectomy, but four weeks later she developed fever, cough with frothy serosanguinous sputum, and right pleuritic chest pain. She was admitted to hospital and chest radiography was performed.

1 What is the most likely diagnosis?
2 What risk factors are associated with the diagnosis?
3 How should this patient be managed?

Submitted by Harpreet Ranu, Shelley Srivastava, and Brendan Madden
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STATISTICAL QUESTION
Errors when statistical hypothesis testing

A randomised controlled trial evaluated the cost and efficacy of community leg ulcer clinics that used four layer compression bandaging. The control treatment was provision of usual care by district nurses. Over the 12 month follow-up, ulcers of patients in the clinic group healed quicker than those in the control group (P=0.03). However, no difference was seen between treatment groups in mean total NHS costs per patient (P=0.89). All statistical tests were two sided, and the critical level of significance was set at 0.05 (5%).

For each of the scenarios below in the total population, determine whether a correct conclusion (*a*), type I error (*b*), or type II error (*c*) occurred as a result of statistical hypothesis testing in the above study.

1 A difference exists between treatment groups in healing times of leg ulcers
2 No difference exists between treatment groups in the healing times of leg ulcers
3 A difference exists between treatment groups in mean total NHS costs per patient

Submitted by Philip Sedgwick
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ON EXAMINATION QUIZ Cholesterol

The answers to this question, and more questions on this topic, are available from www.onexamination.com/endgames until midnight on Wednesday. This week's quiz is on cholesterol and is taken from the OnExamination revision questions for the MRCP exam part 1.

Which one of the following mechanisms best explains the action of ezetimibe?

A Activates peroxisome proliferator activated receptor
B Bile acid sequestration
C Decreases hepatic cholesterol synthesis
D Increases peroxisomal β oxidation of fatty acids
E Inhibits cholesterol absorption

CASE REPORT
Multiple emboli after gastrectomy

A 60 year old man underwent a total gastrectomy for T2a, N0, M0 gastric cancer. Seven days after the operation, while still recovering in hospital, he developed left lower leg pain of sudden onset. He described the pain as severe and said that his leg below the knee felt cold and numb.

His medical history included one deep vein thrombosis and one pulmonary embolus several years apart. He had no other medical history of note. In particular, he had no history of peripheral vascular disease or intermittent claudication. Before the gastrectomy, the only drug that he was taking was long term warfarin; this had been changed to therapeutic dose low molecular weight heparin perioperatively, and he remained on heparin at the onset of leg pain. He was an ex-smoker.

On examination he seemed to be in pain, with a regular pulse of 100 beats/min, blood pressure of 140/70 mm Hg, and temperature of 36.5°C. His left leg was cold and pale, with no pulses palpable below the thigh. The rest of the cardiovascular examination was normal. Computed tomography angiography showed abrupt occlusion of the left common femoral artery, with a further occlusion of the left popliteal artery.

Blood tests were as follows: haemoglobin 99 g/l, white blood cell count 17.7×10^9/l, platelets 65×10^9/l, urea 4.7 mmol/l; creatinine 68 μmol/l, bilirubin 12 μmol/l, activated partial thromboplastin time 27.7 seconds (normal range 26-36), and prothrombin time 14.4 seconds (normal range 11-26). Three days before the onset of leg pain his blood results had been: haemoglobin 101 g/l, white blood cell count 17.6×10^9/l, and platelets 163×10^9/l.

An embolectomy was performed. Two days later he developed left subchondral and pleuritic chest pain. Oxygen saturation fell to 92% on air. Respiratory examination was otherwise unremarkable; examination of the abdomen showed mild left upper quadrant tenderness. He had sinus tachycardia on electrocardiography. Computed tomography pulmonary angiography showed multiple pulmonary emboli; abdominal computed tomography showed low attenuation fluid around the tip of the spleen, consistent with a splenic infarct. Echocardiography was normal.

1 What is the most likely diagnosis, and what differentials should be considered?
2 How would you confirm the diagnosis?
3 How should he be treated?
4 What treatments should be avoided?

Submitted by Matthew Rogers and Graham Smith
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