

ENDGAMES

We welcome contributions that would help doctors with postgraduate examinations. We also welcome submissions relevant to primary care. See thebmj.com/endgames for details

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FOR LONG ANSWERS

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STATISTICAL QUESTION

Measuring the benefit of treatment: number needed to treat

The effectiveness of offering financial incentives to help pregnant smokers quit was investigated using a randomised controlled trial. The intervention consisted of routine care plus the offer of up to £400 (€559; \$600) for women who attended specialist pregnancy stop smoking services and were abstinent from smoking at 34-38 weeks' gestation. The control group received routine care, which included offers of face to face appointments to discuss smoking and cessation, free nicotine replacement therapy, and weekly support phone calls. The setting was a materially deprived inner city population in the west of Scotland. Participants were 612 self reported pregnant smokers aged at least 16 years and less than 24 weeks pregnant. Women were randomised to the intervention (n=306) or control (n=306).

The primary outcome was abstinence from smoking at 34-38 weeks' gestation. Secondary outcomes included birth weight. The proportion of smokers who were abstinent at 34-38 weeks' gestation was significantly higher in the financial incentives group than in the control group (22.55% (n=63) v 8.58% (n=26); absolute risk difference 13.97%, 95% confidence interval 8.2% to 19.7%; $P<0.001$). The number needed to treat (NNT) was 7.2 (5.1 to 12.2). The relative risk of abstinence at 34-38 weeks' gestation for the intervention group compared with the control group was 2.63 (1.73 to 4.01). No significant difference was seen between treatment groups in mean birth weight (3140 (standard deviation 600) v 3120 (590) g; $P=0.67$). The researchers concluded that financial incentives were effective in helping pregnant smokers quit.

Which one of the following statements is the best interpretation of the NNT?

- a) On average, for every 7.2 pregnant smokers offered financial incentives, one would be abstinent at 34-38 weeks' gestation
- b) On average, for every 7.2 pregnant smokers offered financial incentives one more woman would be abstinent at 34-38 weeks' gestation than if those same women received the control treatment
- c) On average, for every 7.2 pregnant smokers who achieve abstinence at 34-38 weeks' gestation if offered financial incentives, 6.2 women would do so with the control treatment

Submitted by Philip Sedgwick

Cite this as: *BMJ* 2015;350:h2206

CASE REVIEW

A 77 year old man with asthma and renal impairment

A 77 year old man presented after a collapse at home with a three week history of dyspnoea, malaise, and myalgia. He reported a 10 year history of hypertension, and that he had undergone a nasal polypectomy seven years earlier and had recently been diagnosed as having asthma. Prescribed drugs included candesartan 4 mg daily, enalapril 20 mg daily, beclometasone dipropionate 200 µg twice daily, and salbutamol as needed. He had not recently changed his drugs or used non-steroidal anti-inflammatory agents or herbal remedies. On examination his blood pressure was 156/88 mm Hg; temperature was 36.8°C; and he had generalised polyphonic wheeze, raised jugular venous pressure (5 cm above the sternal angle), and mild bilateral ankle oedema.

Blood tests showed impaired renal function, with creatinine 691 µmol/L (reference range 60-110), urea 46.2 mmol/L (3.0-6.2), compared with creatinine 102 µmol/L and urea 3.0 mmol/L two months earlier. Other results showed haemoglobin 99 g/L (135-180), mean corpuscular volume 89.9 fL (78-100), white cell count $11.52 \times 10^9/L$ (4.0-11.0), neutrophils $9.38 \times 10^9/L$ (2.0-7.5 $\times 10^9/L$; 81.4%), lymphocytes $0.37 \times 10^9/L$ (1.0-4.5; 3.2%), monocytes $0.29 \times 10^9/L$ (range 0.2-0.8; 2.5%), eosinophils $1.46 \times 10^9/L$ (0.04-0.4; 12.7%), basophils $0.00 \times 10^9/L$ (<0.1; 0%), platelets $228 \times 10^9/L$ (150-400), C reactive protein 857.16 nmol/L (<47.62), and erythrocyte sedimentation rate 115 mm in the first hour (<30).

No paraprotein was detected on serum or urine electrophoresis. Serology was negative for hepatitis B, hepatitis C, and HIV. Urine was positive for protein (urine protein:creatinine ratio 170 mg/mmol, <30), and blood (3+ on dipstick testing). A plain chest film showed clear lung fields and normal cardiac outline. Normal sized, unobstructed kidneys with preserved corticomedullary differentiation were seen on renal tract ultrasound.

He was started on haemodialysis before further investigations to establish a diagnosis.

- 1 What is the likely diagnosis?
- 2 What further assessments and tests are indicated?
- 3 What treatments are used?
- 4 What is the prognosis?

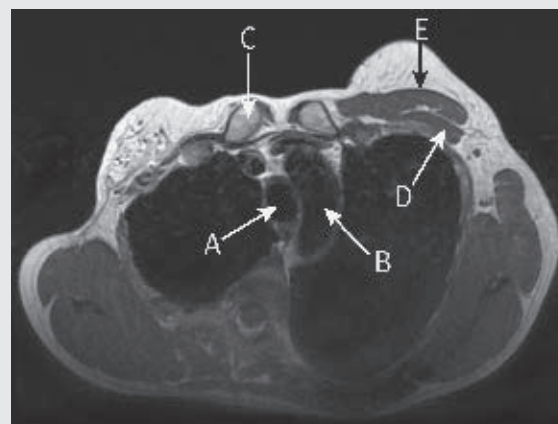
Submitted by Ceris Owen, Sarah Grace Clark, and Robin Woolfson

Patient consent obtained.

Cite this as: *BMJ* 2015;350:h2021

ANATOMY QUIZ

Axial T1 weighted magnetic resonance image through the upper thorax in a 20 year old woman



Identify the structures A, B, C, D, and E in this axial T1 weighted image through the upper thorax of a 20 year old woman. What chest wall anomaly is evident?

Submitted by Emily Skelton and D Howlett

Cite this as: *BMJ* 2015;350:h899

ANSWERS TO ENDGAMES, p 43

For long answers go to the [Education channel on thebmj.com](https://www.bmj.com/education)

ANATOMY QUIZ

Axial T1 weighted magnetic resonance image through the upper thorax in a 20 year old woman

- A: Trachea
- B: Aortic arch
- C: Medial right clavicle
- D: Left pectoralis minor muscle
- E: Left pectoralis major muscle
- Chest wall anomaly is Poland Syndrome

STATISTICAL QUESTION

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Statement *b* best describes the NNT.

CASE REVIEW

A 77 year old man with asthma and renal impairment

- 1 In view of the history of asthma and nasal polyposis, eosinophilia, and severe renal impairment, the likely diagnosis is eosinophilic granulomatosis with polyangiitis (EGPA formerly Churg-Strauss syndrome) with renal involvement.
- 2 EGPA is a multisystem disorder and assessment for neurological, gastrointestinal, and cardiac involvement is required. An autoimmune screen, including anti-neutrophil cytoplasmic antibodies (ANCA), is indicated. Diagnosis requires renal biopsy. Histology showed crescentic glomerulonephritis, segmental necrosis, and interstitial inflammation with an eosinophilic infiltrate, characteristic of EGPA renal disease.
- 3 EGPA typically responds well to steroids but more severe cases may require cyclophosphamide. Steroid sparing agents such as azathioprine and methotrexate can be used to maintain remission. Small scale studies suggest a role for the novel agents, rituximab and mepolizumab, in the management of refractory disease.
- 4 Overall prognosis in EGPA is favourable, with remission in 90% of patients, and five year survival exceeding 90%.