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

STATISTICAL QUESTION

Meta-analyses: what is heterogeneity?

Researchers undertook a meta-analysis to evaluate the effectiveness of multifactorial assessment and intervention programmes in preventing falls and injuries among older people. Randomised or quasi-randomised trials that evaluated interventions to prevent falls and injuries were included. The intervention had to be delivered to individual patients, not at a community or population level. It also had to be service based in an emergency department, primary care, or the community. Control groups could receive standard care or no fall prevention. The outcomes included the number of fallers and fall related injuries.

In total 19 trials were identified. Of these, eight reported fall related injuries. When combined across trials, the risk for fall related injuries was reduced after the intervention compared with the control, but not significantly (relative risk 0.90, 95% confidence interval 0.68 to 1.20). Tests of statistical heterogeneity for the meta-analysis of fall related injuries gave the following results: χ^2=15.77, degrees of freedom=7, P=0.03 (Cochran's Q test), I^2=55.6% (Higgins's I^2 test statistic). Subgroup analyses using a test of interaction based on Cochran's Q test were subsequently performed. The resulting P values were: P=0.75 for site of delivery (hospital v community); P=0.75 for whether a doctor was included in the team (yes v no); and P=0.52 for whether trial participants had been selected because they were at high risk of falls (yes v no).

The study concluded that there was limited evidence that multifactorial fall prevention programmes in primary care, community, or emergency care settings were effective in reducing the number of fallers or fall related injuries.

Which of the following statements, if any, are true for the meta-analysis of fall related injuries?

a) The presence of statistical heterogeneity would be indicative of variation between trials in the magnitude or direction of the sample estimates of the relative risk of fall related injuries

b) The result of Cochran's Q test indicated that heterogeneity existed between the sample estimates

c) Higgins's I^2 test statistic indicated that homogeneity existed between the sample estimates

d) Any statistical heterogeneity in the overall meta-analysis of fall related injuries was not explained by the subgroup analyses

Submitted by Philip Sedgwick
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PICTURE QUIZ A rapidly enlarging swelling of the left orbit

A previously well 16 year old girl presented to acute medical admissions (walk-in assessment clinic) with a one week history of swelling of her left eyelid. She was prescribed amoxicillin for a presumed folliculitis.

She re-presented one week later to the emergency department because the swelling had steadily worsened over the past two weeks. It was tender to palpation but there was no pain with movement. Visual acuity was reduced in the left eye to 6/9 (previously 6/6), and although the swelling appeared to push her left eye "down and to the side" she denied diplopia. Pupils were equal and reactive, and the conjunctiva on the left was mildly injected superonasally. Her eye movements were normal. She had no history of trauma, insect bites, fever, or fatigue. Blood test results were unremarkable.

Her medical history consisted of two right eyebrow cysts removed six years earlier. Family history included a mother with three basal cell carcinomas and a maternal grandmother with chronic lymphocytic leukaemia.

She had no history of alcohol, smoking, or illicit drug use. In the emergency department she was given a second course of systemic antibiotics and scheduled for a follow-up appointment in the ophthalmology clinic nine days later.

In clinic, her visual acuity had drastically decreased to 6/60, the mass had increased in size and felt fluctuant, and her upgaze was now restricted (figure).

1 What differential diagnoses should have been considered at first presentation?
2 What is the most likely diagnosis in this age group?
3 What important investigations are needed?
4 What are the management options?
5 What is the prognosis of this condition?

Submitted by Rachel S Varughese, Elliott Ridgeon, Anna Mathew, and David Sola-Del Valle

Patient consent obtained.
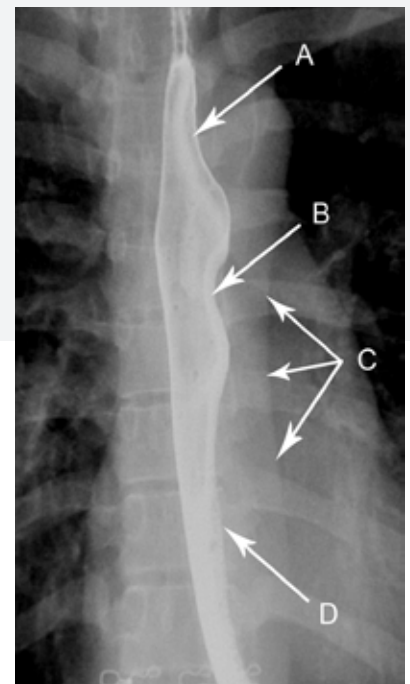Cite this as: *BMJ* 2015;350:h799

ANATOMY QUIZ

Anteroposterior radiograph of a barium examination of the oesophagus

Indentify the structures labelled A, B, C, and D in this anteroposterior radiograph of a barium examination of the oesophagus.

Submitted by Ming-Hua Zheng and Ke-Hua Pan
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CONTRIBUTIONS

We welcome all contributions to the Endgames section.
Longer versions are on the Education channel on thebmj.com.

Please submit via thebmj.com or contact Amy Davis at adavis@bmj.com

STATISTICAL QUESTION

Meta-analyses: what is heterogeneity?

Statements a, b, and d are true, whereas c is false.

ANATOMY QUIZ

Anteroposterior radiograph of a barium examination of the oesophagus

A: Aortic arch impression
B: Left main bronchus impression
C: Thoracic aorta
D: Left atrial impression

PICTURE QUIZ

A rapidly enlarging swelling of the left orbit

1 An orbital mass carries a wide differential diagnosis, with three main categories: infectious causes, orbital tumours, and inflammatory lesions.

2 The rapid growth of the lesion, superonasal position, and non-response to antibiotics favours the diagnosis of a malignant orbital tumour—the most common primary orbital tumour in children.

3 Computed tomography and magnetic resonance imaging of the orbit and surgical biopsy (not fine needle aspiration), followed by staging investigations—computed tomography of the chest, a bone scan, and bone marrow biopsy. Detailed ophthalmological evaluation is advised.

4 Management takes into account patient age, tumour size, site, histology, and staging of disease. Presurgical staging (TNM—tumour, node, metastasis), open surgical biopsy, and postsurgical staging are the first steps. Chemotherapy is always needed. Radiotherapy can be added on the basis of the response.

5 Five year survival is good (84.3%) in localised orbital disease. Recurrence is seen in about 17% of cases, at a median of 18 months from diagnosis, although it is possible beyond five years.