

# ENDGAMES

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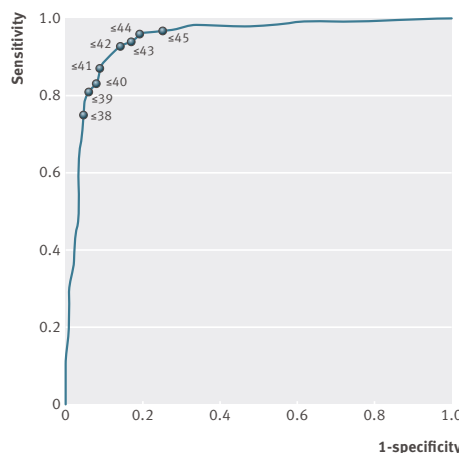
## STATISTICAL QUESTION

### Receiver operating characteristic curves

Researchers evaluated the performance of a cognitive test called “test your memory” as a screening test for Alzheimer’s disease. The screening test is designed to use minimal operator time and to be suitable for non-specialist use. It is self administered under medical supervision. The test has a minimum score of zero and a maximum score of 50; lower scores indicate greater cognitive impairment.

The study was based in hospital outpatient departments. Participants included 94 patients diagnosed as having Alzheimer’s disease. For each patient, three age matched healthy controls without Alzheimer’s disease (n=282) were recruited from accompanying relatives. All patients and controls completed the screening test.

The optimal test score for discriminating between patients with Alzheimer’s disease and controls was investigated. Each score



from 50 down to zero was taken successively as the cut-off point between a “negative” and “positive” screening test result; all scores less than or equal to the cut-off score were considered positive and others were considered negative. For each cut-off score the sensitivity

and specificity of the screening test was calculated, and these values were used to derive a receiver operating characteristic curve (figure). The area under the receiver operating characteristic curve was 0.95.

Which of the following statements, if any, are true?

- For successive cut-off scores, as the sensitivity of the screening test decreases in value the specificity increases
- The value of (1 minus specificity) represents the proportion of controls identified as positive (high risk) on screening
- A screening test with an area under the curve equal to one half (0.5) would discriminate perfectly between patients and controls

Submitted by Philip Sedgwick

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## CASE REPORT

### A mass in the liver

A 38 year old woman presented with a three day history of fever, generalised myalgia and arthralgia, and the sensation of difficulty when breathing in. She had poorly localised discomfort in the left diaphragmatic region on deep inspiration. Her stools had been loose over the preceding three days but she had no other symptoms. Three days before presentation she had returned from a three week trip to Western Australia and 18 months earlier she had travelled to Vietnam.

On examination she appeared well but was febrile at 38.0°C. She was tachypnoeic at 22 breaths/min, but all other observations were normal. Examination of all other systems was unremarkable. Blood tests showed severe neutrophilia ( $18.9 \times 10^9/L$ ; reference range 2.0-8.1), a raised C reactive protein (354 mg/L; reference value <10; 1 mg/L=9.52 nmol/L), and normal renal and liver biochemistry. Chest radiography and urinalysis were normal.

After two days of empirical treatment with intravenous co-amoxiclav (1.2 g three times daily) and oral doxycycline (200 mg once daily), her condition had not changed. She continued to have fevers up to 39.5°C, and her inflammatory markers remained high. Blood cultures taken at presentation were negative.

Computed tomography of the chest, abdomen, and pelvis with intravenous contrast showed a rim enhancing abscess in the left lobe of the liver and a filling defect in the portal vein consistent with portal vein thrombosis.

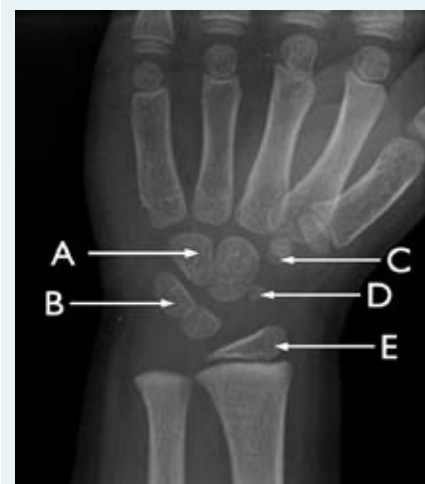
- What is the differential diagnosis?
- Which further investigations or procedures would you undertake?
- What treatment would you start?
- What are the potential complications of this condition?

Submitted by Alex Mentzer and Michael Jacobs

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## ANATOMY QUIZ

### Radiograph of the ossification centres of a child’s wrist



Identify the structures labelled A-E in this radiograph of a child’s wrist.

Submitted by Rosalind Mitchell-Hay and Bijan Hedayati

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