A 74 year old woman presented to the emergency department with a two day history of right flank pain, urinary frequency, haematuria, and vomiting. Her medical history included diabetes (treated with gliclazide), myocardial infarction, hypertension, deep vein thrombosis, and autoimmune hepatitis. She had no urological history.

On examination her temperature was 36.4°C, heart rate 110 beats/min, and blood pressure 95/62 mm Hg, and she was tender in the suprapubic region and right flank. The rest of the physical examination was normal.

Laboratory results showed a white cell count of 12×10^9/l (normal range 4×10^9/l to 11×10^9/l), C reactive protein concentration of 40 mg/l (<8 mg/l), glucose concentration of 28 mmol/l (3.0-6.0 mmol/l), urea level of 12 mmol/l (2.5-6.7 mmol/l), and creatinine concentration of 121 μmol/l (60-120 μmol/l). Urinalysis was positive for leucocytes, nitrites, protein, and frank blood.

The patient was started on intravenous aztreonam and gentamicin for urosepsis because she was allergic to penicillin. A plain abdominal radiograph was performed, and subsequently a computed tomography scan of the kidney, ureters, and bladder was undertaken to look for renal calculi.

1. What radiological abnormality is present on the scans and what is the differential diagnosis of this abnormality?
2. What is the most likely cause in this case?
3. What is the investigation of choice to diagnose this condition?
4. What is the aetiology and what are the risk factors for this condition?
5. How would you manage this condition?

Submitted by Anika Sud, Jaimin Bhatt, and Adam Jones

Cite this as: BMJ 2010;341:c6855

STATISTICAL QUESTION

Sources of bias in randomised controlled trials II

Previous questions described a cluster randomised controlled trial that assessed the long term effects of an obesity prevention programme in schools. The intervention was a focused education programme delivered over one school year that promoted a healthy diet and discouraged consumption of carbonated drinks. The control treatment was no intervention.

The clusters were classes of children aged 7-11 years within schools. Classes were allocated to a treatment group by using a random sequence generated by a researcher not involved in recruitment. A second researcher who was unaware of the sequence recruited 29 classes from six schools. As classes were recruited they were allocated to the next treatment in the sequence. Fifteen classes totalling 325 children were randomised to the active intervention and 14 classes totalling 319 children to the control.

The main outcome measures were change in anthropometric measures such as height, weight, and waist circumference. Three years after baseline, outcome measures were obtained for 219 (67.4%) children allocated to the active intervention and 215 (67.4%) children assigned to the control.

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

a) Allocation concealment was achieved
b) Allocation bias was minimised
c) Attrition bias was minimised
d) The study was a pragmatic trial

Submitted by Philip Sedgwick

Cite this as: BMJ 2010;341:c7053

ON EXAMINATION QUIZ

Bilirubin

This week’s question is on bilirubin and is taken from the onExamination revision questions for the MRCS part 1 exam.

Which of the following statements about bilirubin are true?

A Conjugates iron
B Facilitates absorption of fat from the gut
C Is a steroid
D Is bound to albumin in the circulation
E Is conjugated to glycerine