

ENDGAMES

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STATISTICAL QUESTION

Standardising outcome measures using z scores

Researchers investigated if a shared care obesity management programme reduced body mass index (BMI) and related outcomes in obese children. A randomised controlled study design was used. Intervention consisted of general practice surveillance for childhood obesity, followed by obesity management across primary and tertiary care settings using a shared care model. Intervention was delivered over one year. Control consisted of “usual care.” Participants were children aged 3-10 years with a BMI above the 95th centile for their age and sex. A total of 118 children were recruited through their general practice and randomised to intervention (n=62) or control (n=56).

The main outcome was BMI. Measurements of BMI were transformed to z scores. Secondary outcome measures included body fat percentage, waist circumference, physical activity, quality of diet, and health related quality of life. At the end of follow-up, there was no significant difference between treatment groups in BMI (adjusted mean difference -0.1 (95% confidence interval -0.7 to 0.5; P=0.7)) and BMI z score (-0.05 (-0.14 to 0.03); P=0.2). No evidence of a significant difference was found for any secondary outcome. It was concluded the shared care model of primary and tertiary care management had no effect on BMI and related outcomes in obese children.

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

- The z scores permitted comparisons of BMI between children of different ages and sexes.
- The z scores had the same units as BMI.
- z scores are always positive in value.
- The greater the z score, the heavier a child compared with other children of the same age and sex.

Submitted by Philip Sedgwick
 Cite this as: *BMJ* 2014;22:g5878

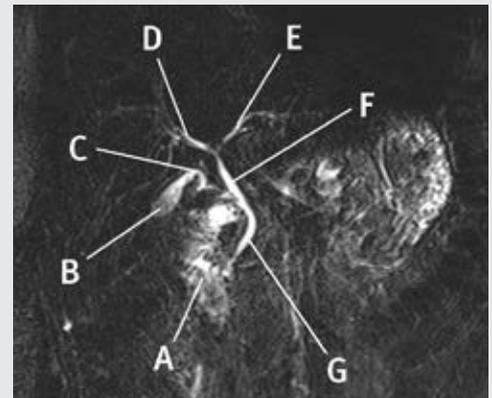
PICTURE QUIZ

A cutaneous manifestation of intra-abdominal disease

A 49 year old man presented to the emergency department with acute onset pain in the right upper quadrant and epigastric pain radiating to his back. Over the past 24-36 hours he had experienced nausea and vomiting as well as dark urine and pale stools, and he had developed several painful lumps on his abdomen and upper limbs.

On examination his abdomen was soft but notably tender in the epigastrium and right upper quadrant, with no palpable intra-abdominal masses or organomegaly. Tender, erythematous, subcutaneous nodules were noted across the trunk and upper limbs. Blood tests on admission showed that he had deranged liver function tests, as well as a raised amylase (20.8 μ kat/L; reference range <1.67) and C reactive protein (1181 nmol/L; <95). His full blood count and urea and electrolytes were normal. Urine analysis was positive for bilirubin and protein.

Abdominal ultrasound showed a thick walled gallbladder containing several small calculi. Magnetic retrograde cholangiopancreatography (MRCP) showed a contracted gallbladder containing several stones (figure), a common bile duct dilated to a maximal diameter of 6 mm with no visible stones or filling defects, and areas of



likely subcutaneous fat necrosis throughout the abdominal wall and upper limbs.

- What is the likely underlying diagnosis?
- What is the definitive treatment for this patient's condition?
- What is the name given to the associated skin lesions?
- Why do the associated skin lesions arise?

Submitted by Lydia Burland and Ben L Green

Patient consent obtained.

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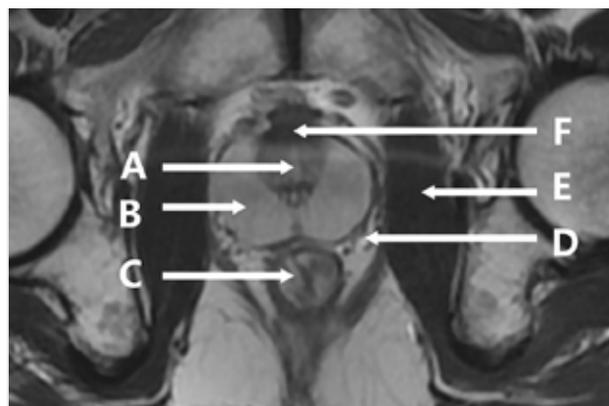
ANATOMY QUIZ

Axial T2 weighted magnetic resonance imaging of the male pelvis

Identify the structures labelled A, B, C, D, E, and F in this axial T2 weighted magnetic resonance image of the male pelvis.

Submitted by Ke-Hua Pan and Ming-Hua Zheng

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