ENDGAMES

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Lead II rhythm strip on a 12 lead electrocardiogram

PICTURE QUIZ An ECG that changed in a febrile patient

A 50 year old man with a history of injecting drug misuse was admitted as an emergency with a reduced level of consciousness and left arm weakness after five days of swinging fever, rigors, and headache. His medical history included hepatitis C infection, paroxysmal atrial fibrillation, and a recent hospital admission with discitis and psoas abscess. His temperature was 38.4°C, but he was haemodynamically stable and alert. He had a soft early diastolic decrescendo murmur along the left sternal border. Splinter haemorrhages were present, along with a small digital infarct of the left third toe and mild upper motor neurone pattern weakness in the left arm. Laboratory investigations confirmed a normocytic anaemia and leucocytosis and blood cultures grew meticillin resistant *Staphylococcus aureus*. Computed tomography of the brain showed a hypodense area in the right frontoparietal area consistent with infarction.
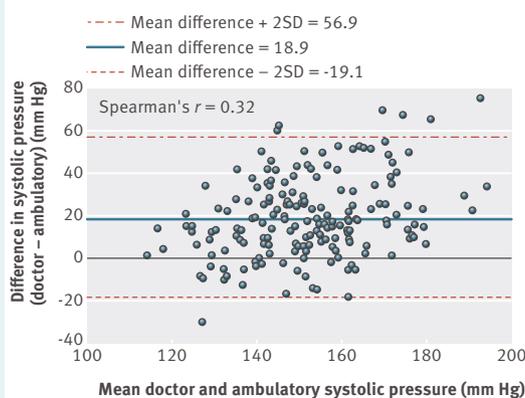
Although the admission electrocardiogram (ECG) was normal, ECG changes developed early in the admission (figure).

1 What is the unifying diagnosis?

2 What is the main abnormality on the electrocardiogram?

3 What is the next definitive cardiac investigation?

4 How should this condition be managed?

Submitted by Thomas Joseph Ford, Greg Cranney, and Annette Li
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ANATOMY QUIZ
Sagittal computed tomography of the ankle

Identify the structures labelled A-D in this sagittal computed tomogram of the ankle.

Submitted by Aaron Kumar Saini and John Afolayan
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STATISTICAL QUESTION
Limits of agreement (Bland-Altman method)

Bland-Altman plot of difference in systolic blood pressure (general practitioner measurement minus daytime ambulatory monitoring measurement) against the mean of the two measurements

Submitted by Philip Sedgwick
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Researchers investigated the agreement between primary care and daytime ambulatory monitoring in blood pressure measurement. Study participants were patients with newly diagnosed high or borderline high blood pressure or those receiving treatment for hypertension but with poor control. In total, 179 patients were recruited from three general practices, and eight doctors were involved in measuring blood pressure. Daytime ambulatory monitoring was undertaken between 0700 and 2300 hours.

A significant correlation was found between the systolic blood pressure measured by the general practitioner and daytime ambulatory systolic pressure (r=0.46; P<0.05). The measurements made by the doctors exceeded those obtained by ambulatory monitoring by an average of 18.9 mm Hg. The Bland-Altman method was used to plot the difference in systolic blood pressure for each patient (GP measurement minus daytime ambulatory monitoring measurement) against the mean of the two measurements (figure).

The limits of agreement are indicated by the red broken lines—that is, the interval of two standard deviations of the measurement differences either side of the mean difference.

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

a) The significant correlation (r=0.46; P<0.05) between the systolic blood pressure measurements indicates good agreement between primary care and daytime ambulatory monitoring

b) About 95% of patients will have a difference in systolic blood pressure between the limits of agreement on the Bland-Altman plot

c) To derive the limits of agreement on the Bland-Altman plot, the differences in systolic blood pressure measurements were assumed to be normally distributed

d) The Bland-Altman plot indicates good agreement between GP and daytime ambulatory monitoring in the measurement of systolic blood pressure