A 71 year old man noticed a right sided facial droop while shaving in the morning. When a neighbour visited shortly afterwards he had difficulty expressing himself. She called for an ambulance and he was taken to the accident and emergency department.

He had a history of amputation above the right knee for peripheral vascular disease, emphysema, and myocardial infarction. His drugs included ramipril, simvastatin, and omeprazole. He was an ex-smoker of 50 pack years and drank alcohol occasionally. He lived alone and was independent in a wheelchair.

His blood pressure was 116/76 mm Hg and his pulse regular at 74 beats/min. His chest was clear and heart sounds normal. Neurological examination showed dysarthria with both an expressive and mild receptive dysphasia. He had right sided facial weakness with sparing of the forehead. Limb muscle tone was normal; muscle power was 3/5 grading in the right upper limb and normal in the left upper limb, left lower limb, and right stumps.

Chest radiography showed cardiomegaly and electrocardiography (ECG) showed sinus rhythm, with poor R wave progression and widespread T wave inversion in leads V4-6 and leads II, III, and avF. Urgent computed tomography of the head showed a left middle cerebral artery infarct.

He was given thrombolytic treatment within three hours of the onset of his symptoms. In view of the substantial changes on ECG, urgent echocardiography was performed the day after admission (figure).

1. What does the echocardiogram show and what is the likely underlying cause?
2. What is the likely cause of the neurological findings?
3. What other investigations would you request?
4. What are the acute and long term management options in this case?

Submitted by Saad Saheecha, Mark Monaghan, Joseph Reiken, and Lynne Millar

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PICTURE QUIZ

A 71 year man with right sided facial droop

1. Which one of the following statistical tests would have been used to compare the proportions of children and drivers who were wearing a seat belt at the time of the crash?
   a) χ² test
   b) Fisher’s exact test
   c) McNemar’s test

Submitted by Philip Sedgwick

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STTATISTICAL QUESTION

Statistical tests: matched pairs categorical data

Researchers investigated the effectiveness of seat belts for protecting children involved in car crashes. They selected a sample of all car crashes within prescribed geographical regions of Canada between 1984 and 1992 that resulted in injury or death. Cars involved in a crash were selected only if one of the occupants was aged 4-14 years and the seat belt status (belted or unbelted) of all occupants was known.

The sample comprised 470 cars involved in a crash. For cars with just one child occupant, the researchers recorded whether the child and driver in the car were wearing seat belts, thereby providing two measurements matched by car occupancy. If a car had more than one child occupant, one of the children was randomly selected. The table shows the association between the seat belt status of the driver and child for each of the 470 matched pairs. The researchers reported a significant difference between drivers and children in the proportion who were wearing a seat belt (P=0.0001). Overall, 59.8% of children were wearing a seat belt compared to 71.3% of adults.

<table>
<thead>
<tr>
<th>Driver’s seat belt status</th>
<th>Child’s seat belt status</th>
<th>Unbelted</th>
<th>Belted</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unbelted</td>
<td>116</td>
<td>19</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Belted</td>
<td>73</td>
<td>262</td>
<td>335</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>189</td>
<td>281</td>
<td>470</td>
<td></td>
</tr>
</tbody>
</table>

Which one of the following statistical tests would have been used to compare the proportions of children and drivers who were wearing a seat belt at the time of the crash?

a) χ² test
b) Fisher’s exact test
c) McNemar’s test

Submitted by Philip Sedgwick

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ON EXAMINATION QUESTION

Trauma

This week’s question is taken from the onExamination revision questions for the FRCS trauma orthopaedics exam.

A 53 year old pedestrian is brought to the emergency department after he was hit on a crossing by a car travelling at about 30 mph. He has numerous bruises and lacerations over his left chest wall.

On examination he appears pale and anxious. His blood pressure is 90/64 mm Hg, heart rate is 116/min, respiratory rate is 20/min, and his jugular venous pressure is raised. Trachea is central and breath sounds are normal bilaterally, but the heart sounds are muffled. A chest radiograph shows fractured fourth, fifth, and sixth ribs on the left side and an enlarged cardiac silhouette.

Which one of the following is the most likely diagnosis in this patient?

A  Cardiac tamponade
B  Diaphragmatic rupture
C  Ruptured thoracic aorta
D  Tension pneumothorax
E  Traumatic haemothorax