phaeochromocytoma or from normal human adrenal tissue. To show whether the tumour was producing physiologically active somatostatin the growth hormone response to an intravenous infusion of growth hormone releasing hormone (100 µg) was studied.² Before operation plasma growth hormone concentration increased by only 7.6 mU/l compared with a normal increase of 54.0 mU/l postoperatively.

Comment

Plasma catecholamine concentrations are characteristically considerably raised in patients with phaeochromocytomas, and biochemical detection of a tumour by measuring the 24 hour urinary excretion of vanillyl-mandelic acid relies on the high excretion of the breakdown products of catecholamine metabolism. Our patient had consistently normal plasma concentrations of catecholamines at rest and after stimulation, and increased concentrations were found only during episodes.

The production of immunoreactive somatostatin within phaeochromocytomas has been described,³ but the production of somatostatin messenger RNA and the probable secretion of functional somatostatin have not been reported. Somatostatin inhibits the release of many hormones and neurotransmitters and suppres-

sion of the growth hormone response to growth hormone releasing hormone typically occurs. Our patient showed a blunted response, which returned to normal after his tumour had been removed; his gastrointestinal symptoms also improved after operation. The tumour was probably secreting somatostatin, but whether this was responsible for our patient's normal resting catecholamine concentrations is not known.

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x Ray film obtained during
barium swallow, showing
dilated oesophagus with food
debris above impacted bolus

Disimpaction of swallowed bolus

P I Ignotus, A Grundy

Impaction of foreign bodies in the oesophagus, particularly large pieces of meat (the steakhouse syndrome), is not uncommon.¹ Once the foreign body is impacted the likelihood of spontaneous passage is small, as mucosal oedema grips it more tightly.

Case report

A 30 year old man was referred from the casualty department for an urgent barium swallow examination. He had a three day history of dysphagia and the feeling of something stuck retrosternally after he had eaten a large piece of steak. He was otherwise well.

The barium swallow showed a large impacted bolus in the distal oesophagus with proximal dilatation and food debris above it (figure). The obstruction did not clear with further mouthfuls of barium. He was given 20 mg hyoscine butylbromide intravenously followed by 25 effervescent tablets (Baritop, an agent used in double contrast studies) and several glasses of water. The symptoms were immediately relieved, and a barium swallow after a few minutes showed that the obstruction had cleared. A little irregularity of the oesophageal wall was attributed to oedema. He failed to attend for follow up.

Comment

Several methods have been suggested to relieve impacted foreign bodies. Removal with a Foley catheter may be possible but carries the risk of mucosal damage.² Proteolytic enzymes, such as chymopapain, may digest a meat bolus but may also lead to mucosal damage, mediastinitis, perforation, or death.^{3,4} Endoscopic removal requires specialised equipment and sedation or anaesthesia and carries risks, and the

patient may need to be admitted to hospital. Several radiological approaches have been tried. The weight of a column of barium is sometimes enough to dislodge a bolus.³ Intravenous glucagon may relax the lower oesophageal sphincter and allow passage of a bolus but was successful in only three out of six patients.⁵ A high success rate has been reported for a combination of barium and carbonated drinks, and a cocktail of tartaric acid and sodium bicarbonate was successful in all eight patients reported on by Mohammed and Hegedus.³ No important complications have been reported, though there is a theoretical risk of aspiration of the agents or oesophageal contents.

The mechanism of action is probably twofold. Gas distends the oesophagus above the impacted bolus and helps to propel it downwards. This distension leads to relaxation of the lower oesophageal sphincter, which is further helped by giving a smooth muscle relaxant.

Oesophageal lesions are an important predisposing factor to obstruction with a bolus and have been reported in 16 out of 28 cases.³ Re-evaluating patients after a short interval when mucosal oedema will have resolved is important.

The radiological techniques of disimpaction are simple, quick, safe, and effective. We suggest the following sequence for dealing with obstruction. Mouthfuls of barium should be tried first; if this is unsuccessful hyoscine and an effervescent agent should be given. If neither of these techniques is successful endoscopy should be performed.

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