Oesophageal Spasm

Oesophageal spasm is a disorder of oesophageal motility. The oesophagus normally propels food from the upper oesophageal sphincter towards the stomach through waves of co-ordinated muscle contraction, or peristalsis. When these waves do not progress normally, oesophageal spasm can result.

Oesophageal spasm can be divided into:

- **Diffuse oesophageal spasm (DES)** - there are unco-ordinated oesophageal contractions. Several sections of the oesophagus can contract at once.
- **Nutcracker oesophagus (NE)** - the contractions are co-ordinated but with an excessive amplitude.

Either condition may be associated with gastro-oesophageal reflux, which can exacerbate symptoms.

**Definitions**[^1[^2]

Based on manometry:

- DES is defined by the presence of at least 20% of swallows showing simultaneous contractions in the distal oesophagus.
- NE is defined as normal peristalsis of the oesophageal body with an average distal oesophageal amplitude exceeding 180 mm Hg.

In DES, most simultaneous contractions are present only in the distal oesophagus; therefore, some authors have proposed renaming this condition 'distal oesophageal spasm'.

**Aetiology**

The precise cause is unknown. Possible factors involved are: a defect in the nitric oxide pathway; abnormalities in the nervous system; visceral hypersensitivity; gastro-oesophageal reflux and smooth muscle thickening in the oesophageal wall.[^3]

DES has been reported to be found in conjunction with other disorders, including anxiety and depression, diabetes mellitus, alcoholic neuropathies, pseudo-obstruction, amyloidosis and scleroderma.[^2]

**Epidemiology**

- The prevalence is unknown.[^3]
- DES can can occur at any age, but is most most often found in patients aged over 50 years. It is found in about 3-10% of patients undergoing oesophageal manometry.[^2]

**Presentation**

May be diagnosed following investigation of non-cardiac chest pain or dysphagia.
Symptoms

- Chest pain:
  - Because the heart and oesophagus are in such close proximity, distinguishing oesophageal pain from cardiac pain can be difficult and oesophageal spasm is often initially diagnosed as angina pectoris. Oesophageal spasm can cause episodes of severe, crushing, retrosternal pain.
  - Oesophageal pain may be gripping, boring, pressing or stabbing. It is usually felt in the anterior chest, throat or epigastrium and can radiate to the neck, back or upper arms, as with cardiac chest pain.

- Dysphagia.
- Reflux-related symptoms - eg, heartburn, regurgitation, cough and hoarseness.

Differential diagnosis

- Myocardial ischaemia or infarction
- Gastro-oesophageal reflux
- Oesophageal web, ring or stricture
- Other oesophageal motility disorders - eg, achalasia
- Oesophageal perforation/mediastinitis (acutely)
- Oesophageal cancer
- Other causes of chest pain

Investigations

NB: remember that oesophageal and cardiac problems can co-exist and diagnosis of one does not exclude the other. Also, any tests create anxiety and can lead to medical dependence.

- Upper gastrointestinal endoscopy: \(^4\)
  - Allows exclusion of mechanical obstruction, oesophageal stenosis, or oesophagitis.
  - Oesophageal biopsies should be obtained to rule out eosinophilic oesophagitis especially when dysphagia is a prominent symptom.
  - Usually no specific endoscopic abnormality is revealed, but disordered oesophageal contractions may be seen.

- Oesophageal manometry:
  - Diagnosis of oesophageal spasms is made on oesophageal manometry - this is the preferred investigation.\(^1\)
  - Continuous spatiotemporal representations of pressure through the oesophagus, recorded with high-resolution manometry, offer greater detail and improved accuracy for many of the most important measurements of oesophageal motor function.\(^5, 6\)
  - 24-hour ambulatory manometry may be more useful than standard, laboratory-based manometry.

- Oesophageal pH studies:
  - Allow assessment of concurrent gastro-oesophageal reflux disease.

- Oesophageal provocation tests
  - Edrophonium injected during oesophageal manometry can provoke abnormal contractions. Limitations are that patients may anticipate symptoms and that it can produce contractions in a normal oesophagus.
• Barium swallow:
  • This may suggest oesophageal spasm; for example, from the appearance of a 'corkscrew oesophagus' or 'rosary bead' appearance. However, these findings are not specific or sensitive for diagnosing oesophageal spasm.[1]

Barium swallow showing oesophageal spasm

• Ultrasound:
  • High-frequency intraluminal ultrasound can assess the sensory and motor function of the oesophagus and help to differentiate DES from NE.

• Cardiac investigations:
  • Are often indicated (or will have already been done) to rule out cardiac causes of chest pain.

Management[1, 3]

There is a lack of both evidence and controlled trials in this area.

Non-drug treatment

• Reassurance that this is not heart disease and that no significant progression occurs.
• Dietary modification.
• Avoiding cold fluids, and taking hot liquids with meals, helps some patients.

Drug treatment[1]

• Rule out gastro-oesophageal reflux (trial of proton pump inhibitor) - this has been suggested as a first step by some authors.
• Subsequent options are:
  • Nitrates.
  • Calcium-channel blockers - eg, nifedipine or diltiazem.
  • Antidepressants - eg, trazodone, imipramine or sertraline; these may act as 'visceral analgesics'.
  • Phosphodiesterase inhibitors (sildenafil, etc) - gave symptom relief in one small study.
  • Peppermint oil - improved manometric findings in one small study.
  • Theophylline - improved non-cardiac chest pain in one trial, and may relax the oesophageal wall.
Invasive or surgical treatment

- Botulinum toxin injection:
  - This involves the injection of Botox® at the gastro-oesophageal junction ± at several levels in the oesophagus.
  - In two studies of this treatment, the authors reported favourable results, but controls were lacking. Repeated injections may be needed.

- Surgical treatment - this is considered as rather drastic by some clinicians.[1]
  - Options are:
    - Oesophageal dilatation.
    - Oesophageal myotomy - published results suggest that this option could be considered in patients with symptomatic DES. However, these results are from highly specialised centres.[1] Surgery seems less effective for NE.[7]

Prognosis[3]

The prognosis is probably good, in that the (limited) evidence so far suggests that most patients have an improvement in symptoms over time, and that DES and NE are unlikely to progress to the more severe condition of achalasia.

However, the evidence suggests that oesophageal spasm is difficult to treat; only a minority of patients found that a specific treatment was helpful.

Areas of debate

- The relationship between manometric findings (DES or NE) and symptoms (chest pain and/or dysphagia) has been questioned.[2]
- It is unclear whether DES and NE are specific and separate diagnoses, or whether they are part of a continuous spectrum of oesophageal motility disorders.[2]
- The current definition of DES has been challenged and alternative criteria proposed.

Further reading & references


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