# 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.

The use of high-resolution manometry (HRM) has led to a re-structuring in the classification of oesophageal motility disorders [1].

Oesophageal spasm used to be divided into:

- **Diffuse oesophageal spasm (DES)** - this referred to a condition in which unco-ordinated oesophageal contractions occurred, with several sections of the oesophagus contracting at once.
- **Nutcracker oesophagus (NE)** - this referred to a condition in which contractions were co-ordinated but with an excessive amplitude.

DES has subsequently been renamed distal oesophageal spasm (DOS) and nutcracker oesophagus has been replaced with the term hypercontractile oesophagus (HO).

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

## Definitions [1]

DES used to be defined as the presence of at least 20% of swallows showing simultaneous contractions in the distal oesophagus. However, the use of HRM has identified that this criterion is not specific for DOS. The best criterion is now considered to be premature contractions, defined as a distal latency <4.5 seconds (distal latency being defined as the time from the onset of swallow to the contractile deceleration point).

Hypercontractile disorders are differentiated from DOS by allowing <20% of swallows with a contraction front velocity (CFV) >9 cm/s (CFV being defined as the slope of the tangent line to the initial portion of the contraction[2]).

# 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].

Upper intestinal motility disorders have been reported to be found in conjunction with other disorders, including anxiety and depression, diabetes mellitus, alcoholic neuropathies, pseudo-obstruction, amyloidosis and scleroderma[4].

# Epidemiology

- The incidence is of DOS is 1 in 100,000 per year. It increases with age and is more common in white people. It has a prevalence of 4-7%[5][6].
- HO occurs in 10% of patients with non-cardiac chest pain[7].

# Presentation

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

### Symptoms[6]

- 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[1]

**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 is no longer routinely recommended but is indicated in symptomatic patients (chest pain, dysphagia or reflux).

- Oesophageal manometry:
    - Continuous spatiotemporal representations of pressure through the oesophagus, recorded with HRM, offer greater detail and improved accuracy for many of the most important measurements of oesophageal motor function. It is particularly helpful in patients with dysphagia, DOS and HO.
    - Standard manometry is still useful for the investigation of gastro-oesophageal reflux, particularly when catheter-based pH monitoring may be required.
    - 24-hour ambulatory manometry may be more useful than standard, laboratory-based manometry.
- 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. More recently, water, bread or a standardised meal followed by postprandial readings have been used.
- Barium swallow may be helpful if endoscopy is contra-indicated but structural problems need to be excluded.
- Ultrasound:
    - High-frequency intraluminal ultrasound can be a useful adjunct to HRM in some cases [8].
- Cardiac investigations:
    - Are often indicated (or will have already been done) to rule out cardiac causes of chest pain.

# Management

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 [9]

- 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 - this is low-cost and has few adverse effects but more research is needed about its effectiveness [10].
    - Theophylline - there is some evidence that this improves non-cardiac chest pain in one trial, and may relax the oesophageal wall [11].

## Invasive or surgical treatment [12]

- 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 [13]. 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 [13]. Surgery seems less effective for NE [14].

## Prognosis [12]

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 DOS and HO are unlikely to progress to the more severe condition of achalasia.

If the disorder is secondary to an underlying condition (eg, scleroderma) the prognosis depends on how well the primary illness is controlled.




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