CASE REPORT

A jackhammer in the gullet: high amplitude oesophageal contractions as a cause of atypical chest pain

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SUMMARY

Chest pain is a common cause for referral to emergency departments. A proportion of these patients have non-cardiac chest pains with normal investigations. Such patients should be considered for oesophageal studies as these may reveal an underlying dysmotility disorder. We report the case of a 51-year-old man who presented with chest pain and underwent oesophageal studies. He was diagnosed with acid reflux and high amplitude oesophageal contractions, otherwise known as a jackhammer oesophagus. Treatment was successful with omeprazole and glyceryl trinitrate relieving his symptoms.

BACKGROUND

Atypical chest pains with negative cardiac investigations can prove to be a challenge for diagnosis and management. Gastroenterological investigations including oesophagogastroduodenoscopy, contrast studies and oesophageal pH/manometry studies may provide the diagnosis. Jackhammer oesophagus is a rare clinical entity characterised by severe atypical chest pains due to repeated high amplitude oesophageal contractions. Being rare, the precise epidemiology is unknown. It is an important diagnosis to make as treatment can be simple and prevent further unnecessary investigations.

CASE PRESENTATION

A 51-year-old man presented with intermittent and recurrent episodes of chest discomfort. One particularly severe episode of chest pain necessitated admission to the emergency department. The physical examination was normal. The patient subsequently developed symptoms of heartburn and odynophagia, but no dysphagia, and was referred to gastroenterology department for further investigations.

INVESTIGATIONS

Initially, a cardiological aetiology was suspected, however, laboratory investigations were normal including serum troponin level, bedside and ambulatory ECG monitoring and coronary angiogram.

An oesophagogastroduodenal endoscopy with histological biopsy was performed, which was unremarkable. The patient declined barium investigations and dual channel 24 h pH studies were, unfortunately, unsuccessful as he was intolerant of the standard nasal catheter pH probe with the test abandoned soon after insertion. A prolonged ambulatory pH (BRAVO) test was performed over

96 h with the advantage of using a wireless capsule temporarily attached to the oesophagus by a small clip. This revealed severe chronic acid reflux.

High resolution oesophageal manometry and pressure topography provided a clear diagnosis (figures 1 and 2). There were normal pressure contractions at the upper oesophageal sphincter. However, the lower oesophageal sphincter basal pressure was hypotensive, leading to a reduced resistance to gastric reflux. Manometry of the oesophageal body revealed intermittent hypertensive contractions. Specifically, a massively hypercontractile oesophagus was also found during eating and drinking, which was also associated with chest pain. This condition has been termed as a jackhammer oesophagus.

TREATMENT

An initial trial of omeprazole 20 mg once daily relieved the patient's heartburn but not his chest pain or odynophagia. He was started on glyceryl trinitrate tablets 500 µg to be taken on an as-needed basis.

OUTCOME AND FOLLOW-UP

At follow-up 6 months later, the patient's symptoms had much improved with no reflux and complete resolution of his chest pain. He was taking omeprazole on an as-needed basis and, as he felt very well, he declined further 'on therapy' oesophageal and BRAVO studies.

DISCUSSION

Jackhammer oesophagus is a newly termed entity within spastic disorders of the oesophagus.¹ It differs from the previously described nutcracker oesophagus in that there are multiple severe high amplitude oesophageal contractions as opposed to a single hypertensive contraction. The commonest symptoms are dysphagia, chest pain and oesophageal outflow obstruction, though many patients also suffer from reflux.¹ The diagnosis is made following clinical suspicion and oesophageal pressure topography where at least one peristaltic contraction with a distal contractile integral (DCI) of >8000 mm Hg cm s is observed.² Our patient had a DCI of 15 000 mm Hg cm s; the normal range being 500–4300 mm Hg cm s. The repeated high pressure contractions are analogous to a Jackhammer or pneumatic drill, hence the name. Ideally, confirmatory follow-up studies would have been performed to demonstrate a reduction in acid

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Figure 1 High resolution oesophageal pressure topography study showing repeated high pressure contractions (arrows) before rapid water swallowing.

reflux and DCI, however, this was not possible and we acknowledge that this may affect the validity of the results.

Gastro-oesophageal reflux has been reported to be associated with coronary vasospasm via an oesophagocardiac reflex.³ Coronary vasospasm was not definitively excluded in our patient, however, his subsequent manometry investigations and response to treatment supports an oesophageal cause for his symptoms.

Jackhammer oesophagus is an uncommon disorder that has been increasingly identified with the advent of high resolution oesophageal manometry and pressure topography. Endoscopic and barium studies are useful to exclude any structural disease but are insensitive in diagnosing dysmotility disorders. The precise aetiology is unknown but is likely due to an excess of

cholinergic drive supported by the observation that contractions are reduced by atropine injection.⁴ Historically, there has been concern regarding the use of prolonged BRAVO pH monitoring in oesophageal hypercontractility disorders, however, our experience, as illustrated by this case, is that it is safe and well-tolerated.

There appears to be no clear consensus regarding optimal therapy, and options are similar to other oesophageal dysmotility disorders. Pharmacological therapy should be trialled first, with a combination of nitrates, calcium channel blockers, phosphodiesterase-5 inhibitors and proton pump inhibitors having potential benefit.⁴ Recently, a small case series of endoscopic therapy involving oesophageal body botulinum toxin injection has reported benefit.⁵ Interestingly, there are also

Figure 2 High resolution oesophageal pressure topography study showing repeated high pressure contractions (arrows) after rapid water swallowing.

recent reported cases of per oral endoscopic myotomy (POEM) being successful treatment.⁶ Surgery with Heller's myotomy may also be beneficial but there is currently a lack of reported evidence.⁴

Jackhammer oesophagus appears to be rare and the optimal management is yet to be determined, however, physicians should be aware of its existence, particularly in the investigation of atypical chest pain.

Learning points

- ▶ Consider oesophageal investigations in patients with atypical chest pains with normal cardiac investigations.
- ▶ Prolonged ambulatory (BRAVO) pH testing should be performed for patients intolerant of transnasal catheter studies.
- ▶ Prolonged BRAVO testing appears to be safe, even in high pressure dysmotility conditions.
- ▶ Patients may respond to medical treatment and this is recommended as first-line treatment once the diagnosis has been made.

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