

SIMPÓSIO DOENÇAS DO ESÓFAGO

Non-invasive assessment of oesophageal transit

In which clinical context do we insert today the non-invasive assessment of oesophageal transit? Firstly, the differential diagnosis of patients with pain in the chest (Table 1) and secondly, the differential assessment of patients suffering from difficulty or impossibility of swallowing (dysphagia or aphagia) as seen in Table 2.

A number of techniques are available today, although emphasis must again be given to the careful recording of a patient's history and patient examination. Barium swallow and barium meal (complementing each other), endoscopy and biopsy, cine-radiography, manometry and radionuclide transit measurement, are the diagnostic methods which assist the clinician in the management of the patient in the circumstances outlined above.

Barium swallow and barium meal are well known, routinely available diagnostic tools. Endoscopy and biopsy complete the retrievable information. Flexible endoscopy is much more appropriate as a diagnostic tool than a fixed approach (can one reproduce pain by instilling an acid solution) and in general endoscopy techniques have clearly improved over the years.²⁴ hour ambulatory pH recording is an additional approach, yet the data is not easy to evaluate and indeed to interpret (some patients exhibit greater acidity in the lower oesophagus than others, similarly the pH clearance varies significantly from patient to patient).

The above mentioned techniques are non quantitative, or at best, offer only semi-quantitative data. The recorded information is of greater anatomical value than of physiological significance. An inspection of Tables 1 and 2 will clearly reveal in which conditions the former may suffice and in which circumstances the latter is found wanting.

What about oesophageal pressure measurements (manometry and related modalities)? Manometry, in the absence of a gold standard, is at present the major method in the evaluation of at least certain types of oesophageal dysfunction. It offers quantitative data, albeit with a typical error of the order of 20% (in the best hands). The method is, however, technically demanding, not necessarily reproducible, requires bulky equipment, it is invasive (the patient must be able to cooperate and swallow a probe) and is time consuming (approx. 30 minutes).

What is required?

There is a need for a simple but quantitative test of oesophageal transit. Non-invasive in its approach, economic, reproducible but above all, repeatable at rapid intervals of time.

The radionuclide tracer approach seems ideally suited to fulfill these criteria and in particular, to match the need for an accurate and quantitative and yet repeatable measurement of transit. The monitoring of a bolus of radioactivity and its passage through the oesophagus can be made entirely non-invasively. The test is over in a few minutes, the nature and composition of the bolus can be varied, data acquisition is position independent and frequent measurements can be made over a period of say, half an hour. Base-line data and more important, data on oesophageal transit under stress, can be easily recorded. Temperature, and in particular, posture, play a role. The normal subject swallows without difficulty in a gravity neutral or slightly anti-gravity posture, whilst in patients with early disease and normal transit at rest, a perturbation of oesophageal motility can be shown by a study undertaken in a Trendelenburg or even simple prone position.¹ The reverse may be true in advanced disease, where oesophageal transit is enhanced in the erect position only. The action of drugs on oesophageal motility is ideally monitored by the radionuclide approach,

TABLE 1 Differential Diagnosis of Recurrent Chest Pain

Gastrointestinal	oesophagitis oesophageal spasm peptic ulcer biliary colic
Cardiac	angina aortic aneurysm mitral leaflet prolapse pericarditis
Psychosomatic	hyperventilation
Musculoskeletal	costochondritis intercostal myalgia cervical spondylosis ankylosing spondylitis
Other	herpes zoster

TABLE 2 Disorders of oesophageal motility

- | | |
|--|--|
| 1. Oesophageal spasm: | cricopharyngeal
diffuse
Chagas's Disease |
| 2. Systemic sclerosis, dermatomyositis | |
| 3. Neurological diseases: | myasthenia gravis
myotonic dystrophic |
| 4. Bulbar paralysis: | poliomyelitis
tetanus |

Oesophageal Obstruction

A) INTRALUMINAL CAUSES

- | | |
|----------------------------|----------------------------|
| 1. In normal oesophagus: | a) foreign body
b) food |
| 2. In abnormal oesophagus: | a) food
b) foreign body |

B) INTRAMURAL CAUSES

- | | |
|---|---|
| 1. Oesophagitis — reflux candidiasis, Crohn's Disease | |
| 2. Benign stricture: | congenital
traumatic
peptic
sideropaenic
pemphigoid
irradiation
anastomotic |
| 3. Benign tumours: | leiomyoma |
| 4. Malignant strictures: primary: | Ca oesophagus
Ca cardia |
| secondary: | Ca bronchus
lymph node metastases. |

C) EXTRAMURAL CAUSES

- pharyngeal pouch
para-oesophageal hiatus hernia
Mediastinal tumour: goitre
Cardiovascular: aneurysm, mitral stenosis, dysphagia lusoria

and a differential diagnosis between anatomical or physiological based disorders can be investigated.

Nevertheless, some difficulties remain. Insufficient baseline data is available at present, with wide differences quoted in the sensitivity and specificity of this approach. More studies are required in an erect, supine and head down positions. Despite this, a consensus begins to emerge that the radionuclide method offers an overall accuracy of the order of 80%² with results approaching, if not surpassing, those obtained with the more invasive and cumbersome counterpart of manometric assessment.

Overall, the non-invasive assessment of oesophageal transit is an expanding and comprehensive area of investigation which may indeed lead to an improvement in the management of a variety of patients suspected of suffering from disorders of motility of this organ.

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REFERENCES

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