Radionuclide Oesophageal Transit Studies

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Endoscopy, barium swallow and manometry remain the main diagnostic modalities for the assessment of oesophageal disorders. While barium swallow is helpful in the detection of anatomical etiologies such as strictures, tumours, webs etc., endoscopy is performed to rule out tumours and to proceed to dilatation in appropriate cases of webs and strictures. In patients with a high index of suspicion for motility disorders, oesophageal manometry is recommended which provides measurements of strength of contraction as well as of timing and coordination of peristalsic waves in the oesophagus. Oesophageal transit studies (OTT) are primarily used in conjunction with manometry for the assessment of motility disorders as it is a reliable, reproducible, easily performed physiological test of oesophageal function[1]. Typically, the method of performing oesophageal scintigraphy involves oral ingestion of a radiolabelled liquid, semi-solid or a solid. Tin colloid labelled with Tc-99m is commonly used because it is neither absorbed by the oesophagus or stomach nor is secreted by the oxyntic cells of gastric mucosa. The study can be subsequently analyzed and processed andtransits times for whole oesophagus as well as the upper, middle and lower thirds can be derived separately. Time activity curves provide information to the clinicians that is not available by other techniques. They can also be used to assess the oesophageal emptying function quantitatively. The use of oesophageal scintigraphy as a screening test for detection of oesophageal motility has been suggested in several reports[2,3]. The sensitivity of oesophageal scintigraphy for the detection of oesophageal motility abnormalities is reported to range from 75%[4] to 96%[2]. Though sensitive, the test is nonspecific as abnormal oesophageal transit could be due to a variety of pathologies, e.g., achalasia, diffuse oesophageal spasm, oesophageal obstruction, scieroderma etc. One of the important clinical indication of OTT study is the objective evaluation of the medical or surgical treatment effectiveness. In patients with acha lasia the oesophageal transit is generally increased when compared with normal controls without oesophageal symptoms. Oesophageal transit generally improves when patients with achalasia are treated with oesophagomyotomy or pneumatic dilatation[5,6]. Although the oesophageal transit value improves significantly, it never completely returns to normal after treatment. It is reported to be unchanged when the therapy is ineffective[7]. If the improvement in oesophageal emptying is not observed after treatment, a re-treatment is recommended[6]. The role of oesophageal scintigraphy is thus not only in the assessment of the immediate and short term effect of treatment but also in the follow-up of long term response to treatment of achalasia. However, no long term study critically assessing the role of OTT and comparing it with other diagnostic modalities like barium swallow and manometry is reported. Oesophageal scintigraphy can also be used to detect the frequency of gastrooesophageal reflux as the same radionuclide marker is used for both studies[8]. Though first introduced two decades ago and used in a variety of clinical settings, the oesophageal scintigraphy and transit study has not gained popularity in routine clinical practice and has largely remained a research tool. Scintigraphy can play a major role in the diagnosis of motility disorders if the findings could be reliably co-related with the manometric data. This could be of special significance in patients who are unable to swallow the manometric catheter. In patients with normal or equivocal manometric study, it can be used for assessing the oesophageal function. The technique can also document the progression of food, solid or liquid, through the oesophagus and quantitate the percentage emptying in a specific period of time. This baseline data can thus be used to assess the course and progression of disease and monitor the effects of therapeutic interventions.

References

1. Kazem, I. A new scintigraphic technique for the study of the esophagus. Am.J. Roentgenol. Radium Ther. NucI. Med., 1972;115:681-88.
2. Netscher, 0., Larson, G.M. and Polk, H.C. Radionuclide esophageal transit: a screening testfor esophageal disorders. Arch. Surg., 1986; 121:843-48.
3. Blackwell, J.N., Hannan, J., Adam, RD., et at. Radionuclide transit studies in the detection of esophageal dysmotility. Gut, 1983;24:421-26.
4. Eriksen, CA., Holdsworth, R.J., Sutton, D., et al. The solid bolus esophageal egg transittest its manometric interpretation and usefulness as a screening test Br.J .Surg., I 987;74: 1130-33.
5. Robertson, CS.. Hardy, J.G. and Atkinson, M. Quantitative assessment of the responsetotherapyinachalasiaofthecardia. Gut, 1989;30:768-73.
6. Holloway, RH., Krosin, G., Lange, R.C., etal. Radionuclide esophageal emptying of a solid meal to quantitate results of therapy in achalasia. Gastroenterology, 1 983;83:771 -76.
7. MacCallum, R.W. Radionuclide scanning in esophageal disoase. J.Clin.Gastroenterol., 1982;4:659-66.
6. Malmud, L.S. and Fisher, R.S. Scintigraphic evaluation of disorders of the esophagus, stomach and duodenum. Med.Clin.North. Am., 1981;65: 1291-1310.