

Pearls & Pitfalls in Gastrointestinal Imaging with Conventional Nuclear Medicine Scintigraphy

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Radio-nuclide Gastro-intestinal imaging is undertaken less frequently as other measurement techniques and diagnostic angiography have become available and more accessible in the emergency situation. For many they remain the gold standard as a research, as well as clinical investigation.

Transit/motility studies are the most common clinical referral, followed by identification of sites of blood loss, particularly ectopic gastric mucosa. In some countries bile acid malabsorption is undertaken, these are limited by local dose limits for long live radio-nuclides. Other radio-isotopic measurements e.g. hydrogen breath tests, Schilling tests for pernicious anaemia have been largely replaced by stable isotopic measurements or a lack of commercial availability.

While oesophageal, stomach, small intestinal and colonic/rectal motility and function may be assessed, Gastric emptying scintigraphy is the most frequently performed; particularly in diabetic and other patients with an autonomic neuropathy. While it may be regarded as a "gold standard" to assess gastric emptying of both solids and liquids there is no consensus on the protocol for optimal meal nutritional content and preparation; quantitation and normal values may need to be established locally. The availability of commercial non-absorbable tracers limits utilisation of small intestinal and colonic transit. Local manufacture of long-lived isotope capsules may be permitted. For all these, full understanding of the clinical picture will help optimise the administration and acquisition parameters. Medication may influence all bowel motility and drug withdrawal may be required, although some clinicians may prefer a baseline study on regular medication when patients remain symptomatic.

SeHCAT or tauroselcholic (Se-75) acid is available as a tracer to measure bile salt malabsorption to differentiate primary and secondary bile salt diarrhoea from irritable bowel syndromes. The retention is measured 7 days after ingestion of a capsule; care must be taken to optimise count rate collection and avoid background contamination. A normal range is used incompletely validated.

Gastrointestinal bleeding scintigraphy using ^{99m}Tc-RBCs or sulphur colloid is performed on patients with suspected gastrointestinal bleeding to determine whether the bleeding is active, to localize the bleeding site, and to approximate the bleeding volume. Protocols to improve labelling should be observed as free TCO₄ causes diagnostic difficulty. Use is usually for small volume blood loss with a normal angiogram.

Heterotopic gastric mucosa may be identified as a source of chronic blood loss in the RIF (Meckel's diverticulum) or other positions e.g. Barrett's oesophagus and reduplication cysts. H₂ receptor antagonists may inhibit release of TCO₄ from the gastric mucosa.

References:

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