



Diagnostic Advances for Common Digestive Conditions

The field of gastroenterology has advanced tremendously in the past 5-10 years. The advent of new technologies in tandem with greater understanding of the digestive tract has enabled the development of new diagnostic tests. We outline some of the new tests available and their role in everyday clinical practice.

COLON TRANSIT STUDIES. Chronic constipation affects 25% of the population in Singapore, and is more common in young women and the elderly. This is often due to slow colonic transit, or to anorectal dysfunction. A colon transit study is a simple yet accurate way to measure the speed at which the colon moves. The patient swallows a capsule containing tiny rings (Sitz markers). 5 days later, a plain X-ray is taken. The number and position of rings are then counted on the X-ray. This allows the doctor to evaluate the colon transit as compared to a 'normal' person.

SMALL INTESTINE BACTERIAL OVERGROWTH (SIBO). SIBO is a well recognized cause of abdominal discomfort and bloating. Studies have indicated that SIBO may be present in up to 80% of patients with Irritable Bowel Syndrome (IBS). SIBO can now be diagnosed using breath testing in the clinic. The patient swallows a liquid reagent such as glucose. Breath samples are then collected every 20 minutes for 3 hours. These are analysed for hydrogen and methane, which are produced by bacteria in the small intestine, and compared to a reference standard.

Small intestine absorption studies. Sugar malabsorption is a well recognized cause of bloating, abdominal discomfort and diarrhea. Common examples include lactose intolerance and fructose intolerance, and can either be due to insufficient enzymes (e.g. lactase) or impaired absorption. Like SIBO, these can be objectively diagnosed with breath testing. The suspected sugar is swallowed as a liquid reagent, and breath samples are collected every 60 minutes for 3 hours. These are analysed for hydrogen and methane, and compared to a reference standard.

TRANSIENT ELASTOGRAPHY (FIBROSCAN). Detecting early fibrosis in the liver is important to allow appropriate treatment to prevent the progression to liver cirrhosis. This is challenging as routine blood tests and radiologic imaging can only detect established cirrhosis, not early fibrosis. In the past, this was possible only with a liver biopsy, which is invasive and has risks. Transient elastography is a simple non-invasive way to detect early fibrosis by measuring liver stiffness. This is done by measuring the velocity of a shear wave as it passes through the liver.

24H COMBINED pH-IMPEDANCE STUDIES. Gastroesophageal Reflux Disease (GERD) is a common condition, and affects 10% of Singaporeans. In Asia, the majority of patients have Non Erosive Reflux Disease (NERD), who are more resistant to treatment with acid suppressants. 24H combined pH-impedance studies is presently the gold standard for diagnosis of GERD, and also allows differentiation of the various subtypes of NERD. This enables the doctor to tailor the ideal treatment for the patient.

HIGH RESOLUTION MANOMETRY (HRM). Movement disorders in the esophagus may cause symptoms such as dysphagia, chest discomfort and reflux symptoms. Likewise, movement disorders of the anus may contribute to constipation or fecal incontinence. HRM is currently the gold standard for diagnosing these disorders, and can be done in a simple outpatient setting.

CAPSULE ENDOSCOPY. Capsule endoscopy was first introduced 15 years ago as a novel way of visualizing the small intestine. The patient swallows a small wireless camera the size of a medication capsule. This then takes pictures as it transits through the small intestine, and transmits the images to an external recorder. We are now in the era of 2nd generation capsules with greater image resolution and longer battery life. Capsule endoscopy has now an essential part of daily medicine, particularly in the evaluation of unexplained iron deficiency anaemia or occult gastrointestinal bleeding. It can be done easily in an ambulatory setting, with the patient continuing about his daily routine.

IMAGE ENHANCED ENDOSCOPY (IEE). IEE enables accurate examination of the surface features and blood vessels of the digestive tract. It utilizes either special dyes (i.e. chromoendoscopy) or technology (e.g. narrow band imaging) to better visualize abnormal areas and identify the best areas for biopsy. IEE allows detection of early cancers and precancerous areas that routine endoscopy would miss altogether. IEE can be easily incorporated into routine endoscopy to provide a more thorough and detailed endoscopic examination.

ENDOSCOPIC ULTRASOUND (EUS). EUS allows detailed examination of the digestive tract beneath its surface, and is ideal for assessing any growth seen in the digestive tract, including submucosal lesions. It is also considered the most accurate screening modality for organs adjacent to the digestive tract, such as the pancreas and biliary system. It can detect lesions missed by radiologic imaging, for example in the investigation of abnormal tumour markers. EUS can also guide a fine needle aspirate (FNA) accurately into growths outside the digestive tract to enable precise sampling. EUS

Digestive symptoms comprise a significant burden in General Practice. New tests allow doctors to evaluate the 'function' of the gut, such as its movement and absorptive capability, while improved endoscopic technology allows doctors to evaluate the 'structure' of the gut with unprecedented accuracy. Many of these new tests are available in an ambulatory setting, and are now readily accessible to patients in Singapore. It is important for Family Physicians in Singapore to keep abreast of these new developments so that they can optimize the management of common digestive disorders in their patients.



DR JARROD LEE is the founder of gutCARE Digestive • Liver • Endoscopy Associates, the first gastroenterology group practice in Singapore, with doctors sub-specialising in different areas of digestive disorders. Dr Lee graduated from the National University of Singapore. He was admitted as a Member of the Royal College of Physicians and obtained his specialist accreditation in 2009. In 2010, he was invited to set up a Gastroenterology Service for Khoo Teck Puat Hospital. He established the Endoscopy Centre and Division of Gastroenterology in 2013 before leaving for private practice.

Dr Lee is recognised in the region for advanced endoscopy, and is regularly invited as faculty in endoscopic workshops and conferences both locally and regionally. He has established himself in advanced imaging, in complex cases and in combining the various endoscopic platforms and techniques. He is best recognized for Endoscopic Ultrasound (EUS), where his technique is featured in the ASGE Learning Library. In 2011, he won the ASGE AV Award for endoscopy, beating over 100 submissions from 17 countries in the competition. Dr Lee is the first doctor from Southeast Asia to win this distinguished award.

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