

Abdominal imaging diagnosis

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Findings and diagnosis

Please refer to page 21 of the March 2010 issue of the *SAJR* (<http://www.sajr.org.za/index.php/sajr/article/viewFile/422/354>) for the clinical details and images. We congratulate Dr Richard de Villiers of Drs Van Wageningen and Partners in Somerset West for his precise diagnosis, for which he receives an award of R1 000 from the RSSA. Dr Misser elaborates below on the condition and its radiological signs.

Diagnosis

The plain radiographs are useful in clarifying the relevant negative findings. Of note is the absence of intestinal obstruction on the abdominal radiograph (Fig. 1a) and no free subphrenic air on the chest radiograph (Fig. 1b). There is questionable mass effect in the central and right paramedian major pelvis on the abdominal radiograph. Sonar (Fig. 1c) revealed a right lower quadrant inflammatory mass with posterior acoustic shadowing and surrounding loculated fluid collection. The post-contrast CT scans (Figs 2a-c) better define the central dense enhancing focus at the epicentre of the inflammatory process with surrounding wall thickening, fat stranding and fluid collection. Mass effect on adjacent bowel loops and pelvic viscera is evident. At exploratory laparotomy, the inflammatory mass was identified, with omental wrapping preventing diffuse peritonitis. Histopathology revealed an acutely inflamed Meckel's diverticulum with ectopic gastric tissue and haemorrhagic peptic ulceration, confirming the suggestion of Meckel's diverticulitis in our CT report.

Meckel's diverticulum (MD) is the most common congenital abnormality of the small bowel, estimated to occur in 2% of the population.¹ Although usually an innocuous anomaly, complications

(including diverticulitis, haemorrhage and obstruction) bring up to 4%² of these patients to accident and emergency centres (A&E centres) world-wide. Of these, only a small proportion are found to be due to the presence of ectopic gastric tissue with haemorrhage. Imaging studies are useful, but pre-operative diagnosis is rare. Plain radiographs are largely used to identify intestinal obstruction or pneumoperitoneum. Sonography may show the typical 'gut signature'³ of the wall of the MD in the inflammatory mass. Angiography is used in patients with occult gastro-intestinal bleeding and suspected MD.

Tc-99m pertechnetate (Meckel scan) scintigraphy has an overall diagnostic accuracy of 90% in MD with ectopic gastric mucosa,¹ but has been less utilised with multi-slice CT advances prompting improved detection on CT scan. A high index of suspicion Meckel's diverticulitis must be maintained by the reporting radiologist in the presence of a loculated, central, or right central, lower abdomino-pelvic blind-ending bowel mass on CT scan. The diverticulum may contain fluid, air, faecal matter, enteroliths or any combination thereof.^{1,3} Central mucosal enhancement and surrounding mesenteric inflammation is commonly noted. The principle differential consideration of appendicitis may be excluded with certainty when a separate normal appendix is visualised on CT. Other differential diagnoses include inflammatory bowel disease, colitis, typhlitis, carcinoid or other bowel tumour, and pelvic inflammatory disease in females.

1. Bennet GL, Birnbaum BA, Balthasar EJ. CT of Meckel's diverticulitis in 11 patients. *Am J Roentgenol* 2004; 182: 625-629.
2. Leijonmark CE, Bonman-Sandelin K, Frisell J. Meckel's diverticulum in the adult. *Br J Surg* 1986; 73: 146-149.
3. Levy AD, Hobbs CM. From the archives of the AFIP. Meckel diverticulum: Radiologic features with pathologic correlation. *Radiographics* 2004; 24: 565-587.