

## Acute gastric dilatation: An incidental finding in a Meckel study

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A Meckel study was performed in a patient with melena who at the same time had a peritoneal catheter for dialysis because of renal failure. There was no pathological or abnormal accumulation of Tc-99m pertechnetate in the abdomen, except for the stomach where gastric dilatation was observed. This incidental finding of gastric dilatation which was thought to be a result of irritation of the peritoneal cavity, disappeared 24 hours after the peritoneal catheter was removed.

**Key words:** Tc-99m pertechnetate, Meckel study, acute gastric dilatation

### INTRODUCTION

TECHNETIUM-99m (Tc-99m) pertechnetate imaging has been used to detect bleeding in Meckel's diverticulum since 1970.<sup>1</sup> Besides Meckel's diverticulum there are several reasons for Tc-99m pertechnetate accumulation in the abdomen. These are either lesions including ectopic gastric mucosa or lesions showing increased hypervascularity and/or blood pool activity.<sup>2</sup> Physiological Tc-99m pertechnetate secretion via the gastrointestinal and urinary system may occasionally reveal organ pathologies other than Meckel's diverticulum. We report a case of incidentally detected acute gastric dilatation (AGD) during a Meckel scan that has not been reported in the literature to our knowledge.

### CASE REPORT

A 14-year-old boy was admitted to the hospital because of nausea, pain in his abdomen and decreased urinary output. The patient had a history of abdominal operation due to nephrocalcinosis 10 years previously. He had a blood

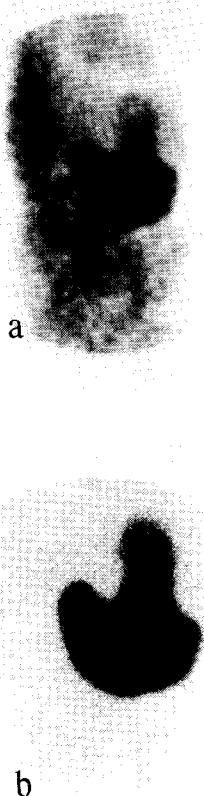
pressure of 150/100 mmHg, a pulse of 88 beats per minute and a temperature of 38.4°C. Serum creatinine, urea nitrogen and creatinine clearance values were 9.7 mg/dl (N: 0.5-1.5 mg/dl), 188 mg/dl (N: 5-24 mg/dl) and 10.8 ml/min (N: 95-160 ml/min) respectively. Renal failure was diagnosed and peritoneal dialysis was initiated by placing a catheter. Hematocrit and hemoglobin values dropped to 8.0 g/dl and 21% respectively, and melena was observed.

A Tc-99m pertechnetate scan was performed to rule out the bleeding of a suspected Meckel's diverticulum. The patient was premedicated with histamine H<sub>2</sub> receptor blocker, 2 mg/kg intravenously. Thirty minutes later, 370 MBq of Tc-99m pertechnetate was injected and 128 × 128 (word) matrix, 1 minute images were obtained for the next 60 minutes. Although there was no focal tracer accumulation to suggest the presence of a Meckel's diverticulum, the stomach seemed to be significantly enlarged (Fig. 1). A four-hour image showed the persistence of gastric enlargement with increased Tc-99m pertechnetate accumulation. This activity augmentation was probably due to the decreased gastric peristalsis. Peritoneal lavage was stopped and the catheter was removed. Twenty-four hours after the initial scan an additional 256 × 256 matrix, 2 min static image was obtained. This showed partial normalization of gastric enlargement (Fig. 2). Retrospectively, the enlargement in previous images was interpreted as acute gastric dilatation. The next day, no more melena was observed.

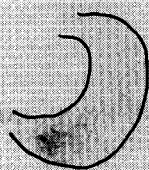
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**Fig. 1** Meckel scan. a. An image at 2 min. b. An image at 30 min.



**Fig. 2** An image after twenty-four hours showing partial normalization of gastric dilatation.

### DISCUSSION

Acute gastric dilatation is characterized by a rapid enlargement of the stomach. Rokitsky described the first case of AGD and suggested that it was due to the compression of the transverse duodenum by the superior mesen-

teric artery.<sup>3</sup> Later reports demonstrated that most of them occurred after surgery when the peritoneal cavity had been transgressed including minor surgical procedures. Although the precise cause of AGD is not known, anesthesia, trauma, body cast, diabetic ketoacidosis and drug overdosage are contributory factors.<sup>3-5</sup> In diabetics, stressful conditions may also cause AGD in the absence of acidosis.<sup>6</sup> These factors cause AGD via reflex gastric inhibition or primary duodenal compression. When the stomach becomes distended, interstitial fluid drains into its lumen and acid secretion is stimulated by both long vagovagal reflexes and short intragastric reflexes.<sup>7</sup>

Patients with AGD suffer from vomiting and abdominal pain. Physical examination may reveal abdominal dilatation and reduced bowel sounds. Finally, shock develops in untreated patients due to increased portal vein pressure, inferior vena cava compression and fall in plasma volume. AGD is diagnosed by direct x-ray of the abdomen; upright and decubitus projections demonstrate an air-fluid level. A barium study may be useful in diagnosis. Laboratory studies may show an increased blood urea nitrogen level, decreased cardiac output and acid-base imbalance. Complications associated with acute gastric dilatation include aspiration pneumonitis, gastric perforation and prolonged ileus. Gastric mucosal bleeding is another important complication which may occur due to ischemia caused by tissue dilatation in the gastric surface.<sup>3</sup>

Our case is an example of AGD during a Meckel's diverticulum study. The disappearance of abdominal symptoms and melena following catheter removal led to the diagnosis in this patient. The visualization of partial recovery by a control scan 24 hours later was affirmative for the clinicians and no further invasive procedures were undertaken. The Meckel scan was the decision making procedure in this patient. In our opinion, the most interesting aspect of the case is that a cause of gastrointestinal bleeding other than Meckel's diverticulum could be shown by a Tc-99m pertechnetate study. In any case of atypically enlarged appearance of the stomach during a Tc-99m pertechnetate study, such as a Meckel scan, AGD should be considered.

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