

TECHNICAL NOTE

Technical Notes for Scintigraphy of Meckel's Diverticulum

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We report an adjunctive procedure for good pertechnetate visualization of Meckel's diverticulum.

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Most authors agree on the importance of abdominal scintigraphy in the diagnosis of a Meckel's diverticulum that contains heterotopic gastric mucosa (1). It is based on concentration of Tc-99m by the parietal cells of the gastric mucosa, probably as a result of active mucosal trapping of the pertechnetate and its subsequent secretion into the lumen.



FIG. 1. Scintigraphic image (anterior view) performed without Levin tube at 25 min after injection. Note several areas of increased radioactivity besides stomach and urinary bladder.

Frequently, however, pertechnetate also accumulates in the duodenum and even in the upper jejunum, due to the normal caudad movement of radioactive gastric contents. Such intestinal activity may mask the image of the diverticulum. The suggested use of perchlorate to suppress salivary and gastric excretion of pertechnetate (2) will also suppress its concentration in a Meckel's diverticulum (3,4).

In order to minimize confusion in the scintigram, Gilday et al. (3) have proposed aspiration of the gastric secretion with a Levin tube. Following this suggestion, we have studied 12 patients of

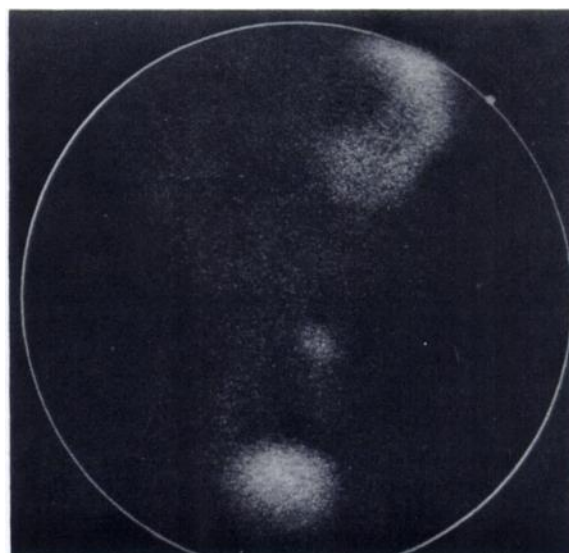


FIG. 2. Anterior scintigram, performed with Levin tube at 20 min after injection. Aside from stomach and urinary bladder, a single focus of activity appears.

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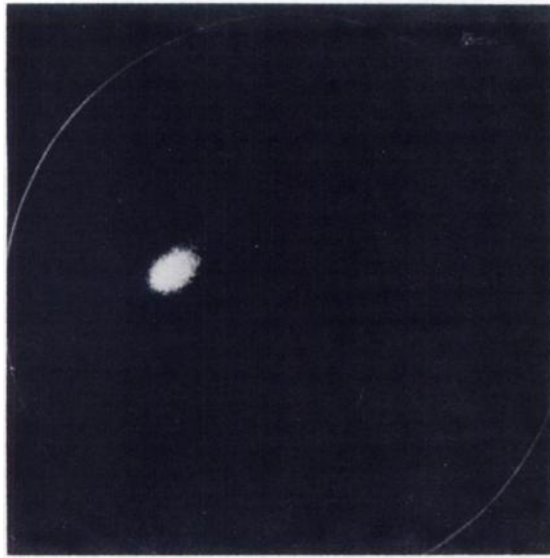


FIG. 3. Scintigram of surgical specimen shows concentration of tracer in Meckel's diverticulum.

both sexes, ages 2–14 yr. The Levin tube was positioned in the fasted patient 15–20 min before the beginning of the scan. In three patients scans were performed with and without the tube. Sequential anterior and lateral images were obtained at 15, 20, 25, 30, 60, 90, and 120 min after i.v. injection of 70 μ Ci of [^{99m}Tc] pertechnetate per kg of body weight. A gamma camera with

high-resolution collimator was used with a single-lens Polaroid camera working on-line with a data-processing unit.

In four of the 12 patients, a well-defined, persistent uptake of the tracer was found in the right lower abdominal quadrant. As it may be seen in Fig. 1, the image performed without aspiration at 25 min resulted in a masking of intestinal activity. Figure 2 shows a well-defined Meckel image obtained under gastric aspiration. The stomach shadow is weak, the intestinal shadows minimal. The picture persisted in later scintigrams. At surgery a large diverticulum was removed, and it was found to contain heterotopic gastric mucosa. Figure 3 is a scintigram of the surgical specimen.

The limited number of our cases does not permit any statistically significant conclusion to be drawn. We think, however, that this procedure—easy to perform and completely risk-free—may substantially improve the visualization of a Meckel's diverticulum.

REFERENCES

1. BERQUIST TH, NOLAN NG, ADSON MA, et al: Diagnosis of Meckel's diverticulum by radioisotope scanning. *Mayo Clin Proc* 48:98-102, 1973
2. JEWETT TC, DUSZYNSKI DO, ALLEN JE: The visualization of Meckel's diverticulum with ^{99m}Tc -pertechnetate. *Surgery* 68: 567-570, 1970
3. GILDAY DL, ROSENTHALL L, DUSZYNSKI DO, et al: Abdominal imaging in pediatrics. In *Pediatric Nuclear Medicine*, James AE, Wagner HN, Cooke RE, eds. Philadelphia, WB Saunders, 1974, p 298
4. FEGGI LM, FRANCHELLA A: Preoperative diagnosis of Meckel's diverticulum with ^{99m}Tc -pertechnetate. *Ric Clin Lab* 7:86-92, 1977

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