

# Unusual Appearances of Normal Bowel Activity in Gallium Scintigraphy

Jeffrey Bisker, Rita R. Girolamo, and Joseph McCarthy

*New York Medical College, Valhalla, New York*

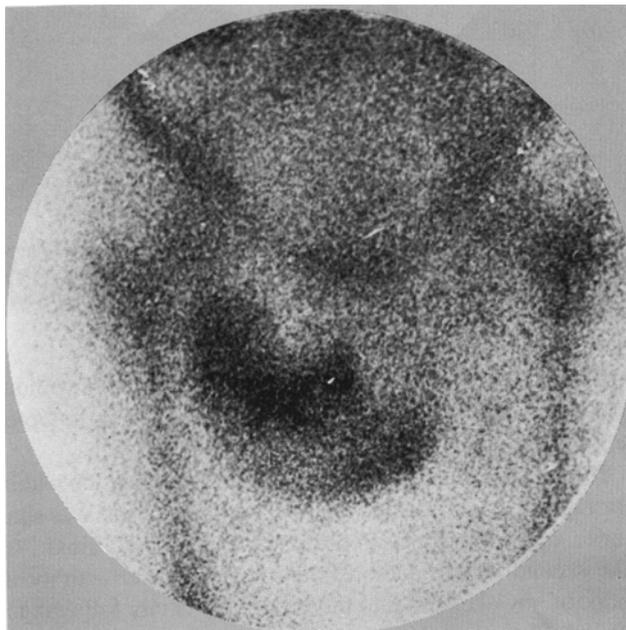
The use of radionuclides in the evaluation of patients with fever of unknown etiology is well known (1-3). The most commonly used radiopharmaceuticals are gallium-67 citrate and indium-111-labeled white blood cells.

We discuss two patients in our institution who had been evaluated with gallium scintigraphy for fever of unknown origin. In each instance, there was no abnormal localization of tracer activity in abscesses. There were, however, unusual appearances of normal bowel activity, which, in the absence of a physical examination of the patient during the imaging procedure, could have resulted in misinterpretation of the findings.

**Case 1:** A 64-year-old white man with known diagnosis of squamous cell carcinoma of the larynx was admitted with complaints of fever and malaise of several days duration. Physical examination demonstrated a thin cachectic male in no acute distress. Postsurgical changes secondary to partial laryngectomy were noted in the antero-lateral aspect of the right side of the neck without presence of superficial inflammatory mass. Oral temperature was 100.6 °F. The remainder of the examination was unremarkable except for the presence of right inguinal hernia.

The patient was referred to nuclear medicine for a gallium scan to evaluate possible source of fever. The 24-hr scan following intravenous injection of 4-mCi gallium-67 citrate showed normal localization of activity and renal excretion. The 48-hr scan (Fig. 1), however, demonstrated tracer uptake in tubular structures caudal to the pelvis and medial to the right thigh, which was subsequently confirmed by physical examination as normal bowel activity within an inguinal hernia sac. No abnormal localization of tracer activity was demonstrated to suggest abscess or neoplasm. The patient's condition improved with conservative medical management and presumably his fever was secondary to viral infection.

**Case 2:** A 59-year-old white man had been spiking fevers to 103 °F. The patient had recently undergone a hemicolectomy for adenocarcinoma of the ascending colon. He was referred to nuclear medicine for a gallium scan to help rule out



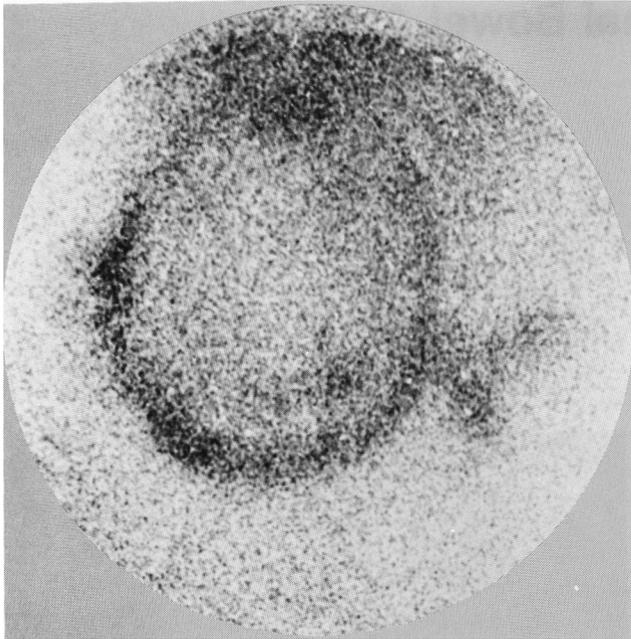
**FIG. 1.** 48-hr image performed in anterior projection demonstrates normal activity of gallium within the pelvic bones, proximal femora, and soft tissues. Activity in right scrotal region is present because of loops of bowel within inguinal hernia sac.

subhepatic abscess. Scans performed 24 hr following intravenous injection of 4-mCi gallium-67 citrate showed normal localization of activity and renal excretion. The 48-hr images (Fig. 2), however, demonstrated a circular collection of activity that simulated the appearance of the vertex view on a brain scan. The left anterior oblique projection demonstrated a double loop of gallium activity (Fig. 3). These findings were subsequently shown to represent bowel loops external to the abdominal cavity following wound dehiscence. No other abnormal collections of gallium were identified to suggest presence of abscess or neoplasm.

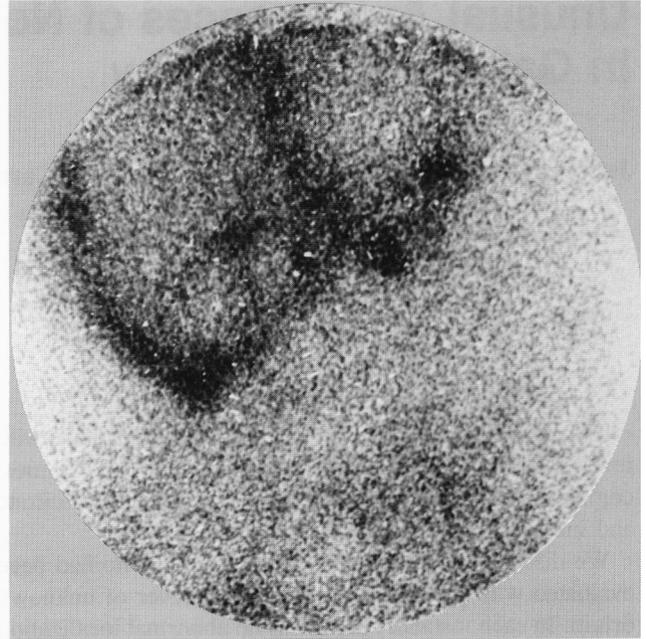
## Discussion

During the first 24 hr following intravenous injection of gallium-67 citrate, the primary mode of excretion is via the urinary tract (1). On all subsequent scans, gallium activity normally localizes in the colon usually delineating the normal colonic anatomy (1). Both patients described herein

For reprints contact: Jeffrey Bisker, Dept. of Nuclear Medicine, University of Louisville Health Science Center, 530 Jackson St., Louisville, KY 40202.



**FIG. 2.** 48-hr abdominal image performed in the anterior projection demonstrates circular appearance of gallium activity within loops of bowel external to the abdominal cavity. It is due to wound dehiscence. Normal liver activity is identified superiorly.



**FIG. 3.** 48-hr abdominal image performed in the left anterior oblique projection demonstrates bilobed appearance of gallium activity within bowel loops secondary to wound dehiscence. Again, normal liver activity is noted superiorly.

demonstrated an unusual location and configuration of gallium activity subsequently proven by physical examination to represent normal colonic activity in an ectopic location.

The first patient demonstrated tracer accumulation within normal loops of bowel and inguinal hernia sac. This was similar to a case previously reported by Boxen and Lamki (4). The second patient demonstrated normal tracer activity in loops of bowel external to the abdominal cavity following a wound dehiscence. Had these unusual sites of tracer accumulation not been recognized as normal bowel in an ectopic location, this patient most probably would have been misdiagnosed as having findings compatible with abscess and would have received inappropriate antibiotic therapy. He might have also had unnecessary surgery.

In summation, these two cases demonstrate the necessity for carefully examining patients and considering the possibility of ectopic bowel when one is confronted with unusual abdominal or pelvic localizations of gallium. This will enable the physician to interpret scintigraphic findings properly.

### References

1. Larson FM, Hoffer PB. Normal patterns of localization. In: Hoffer PB, Bekerman SC, Henkin RE, eds. *Gallium-67 imaging*. New York: John Wiley & Sons, 1978:23-38.
2. Staab EV, McCartney WH. Role of gallium-67 in inflammatory disease. *Semin Nucl Med* 1978;8:219-34.
3. Segal AW, Thakur ML, Arnot RN, et al. Indium-111 labeled leucocytes for localisation of abscesses. *Lancet* 1976;2:1056-58.
4. Boxen I, Lamki L. Gallium in the sac. *Clin Nucl Med* 1981;6:495.