# Diaphragmatic Paralysis Simulating Pulmonary Infection on Gallium-67 Scan

*Ya-Wen Chuang, MD,* Chien-Chin Hsu, MD,† Chia-Yang Lin, MD,* and Ying-Fong Huang, MD**

**Abstract:** Ga-67 is a useful agent for imaging infection, especially in the chest, but is not so reliable in the abdomen because of physiological bowel activity. A 64-year-old man with fever of unknown origin received a Ga-67 scan for survey of any occult infection focus. Focal Ga-67 accumulation was noted in the left lower chest region on the 24-hour image, but a different pattern of radioactivity was shown on the 48-hour image after bowel cleansing. On review of the chest radiographs and history, we found bowel activity in the left lower chest secondary to diaphragmatic paralysis masqueraded as pulmonary infection. Diaphragmatic paralysis should be considered as a differential diagnosis of abnormal activity in the chest on Ga-67 scan.

**Key Words:** gallium-67 scan, diaphragmatic paralysis, pulmonary infection

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From the *Department of Nuclear Medicine, Chung-Ho Memorial Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan; and the †Department of Nuclear Medicine, Pingtung Christian Hospital, Pingtung, Taiwan.

Reprints: Ya-Wen Chuang, MD, Department of Nuclear Medicine, Chung-Ho Memorial Hospital, No.100, Tzyou 1st Road, Kaohsiung 807, Taiwan. E-mail: ywchuang@kmu.edu.tw.



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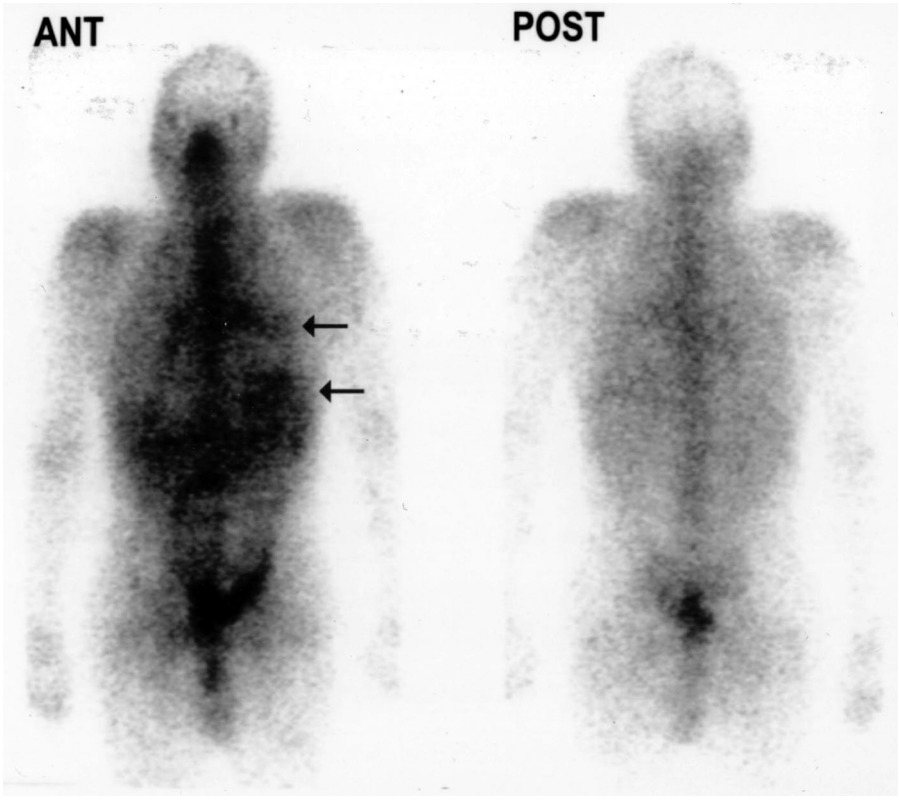


**FIGURE 1.** A 64-year-old male heavy smoker complained of fever, dyspnea, poor appetite, and general soreness for 1 month. For evaluation of occult infection, a Ga-67 scan was performed after injection of 111 MBq (3 mCi) Ga-67 citrate. The anterior and posterior images at 24 hours showed normal physiological uptake in the lacrimal glands, nasopharynx, liver, bone, bowel, and genital region. The uptake in bilateral pulmonary hila is common in elderly patients and smokers.[1] Abnormal foci of increased Ga-67 uptake in the left lower chest region (arrows) were suspected as pulmonary infection.

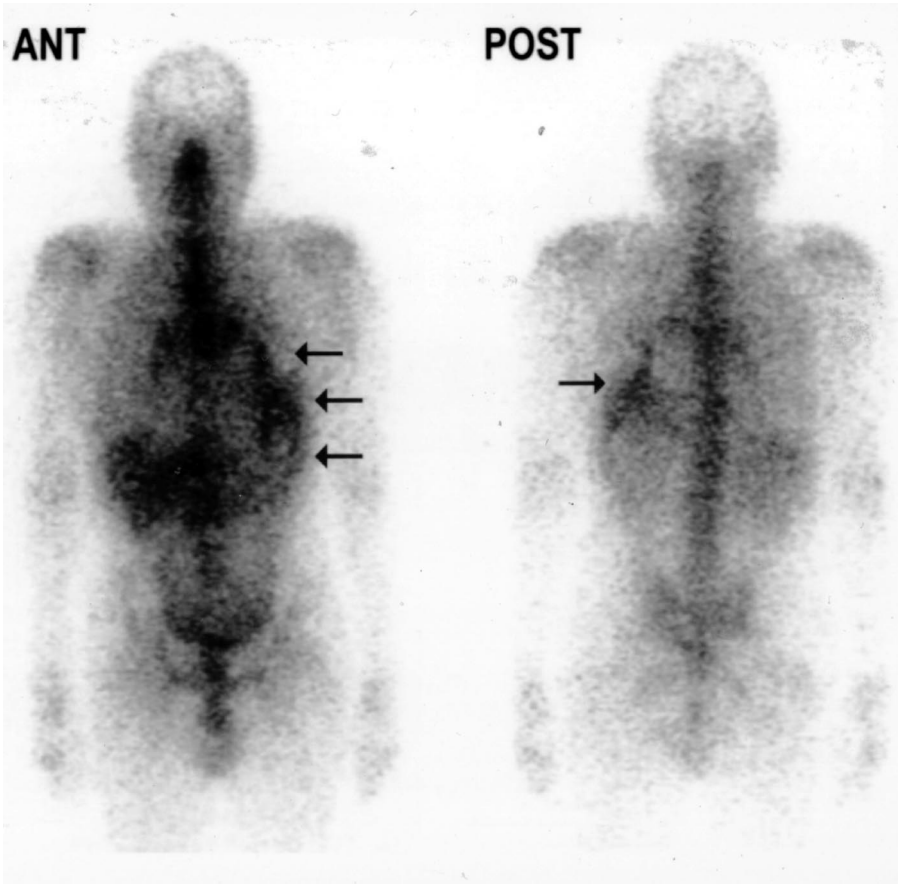


**FIGURE 2.** Ga-67 scan plays an important role for imaging infection,[2–4] especially in the chest,[5] but is not so reliable in the abdomen because of physiological bowel activity. To minimize the interference of normal bowel activity on a Ga-67 scan, a repeat scan after additional bowel cleansing is frequently needed.[6] Radiotracer in the intestinal lumen usually moves and different patterns of bowel activity are shown between early and delayed images after bowel cleansing. A gallium-avid lesion with a persistent fixed pattern on both images usually implies a true lesion of infection or malignancy. The 48-hour image after bowel cleansing by castor oil showed a different pattern of pulmonary activity (arrows) in comparison with the 24-hour image. It suggested that pulmonary infection might be a false-positive interpretation.

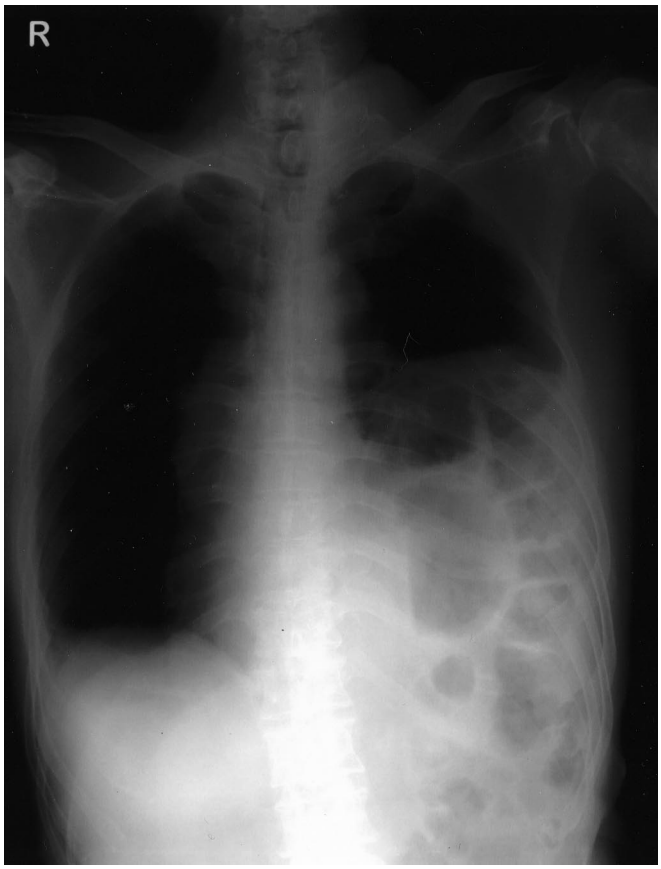


**FIGURE 3.** On review of his history and chest radiographs, left hemidiaphragm elevation with mild displacement of the heart to the right was noted for more than 10 years. A paralyzed left hemidiaphragm with bowel elevation to the left lower chest was considered as the cause of pulmonary activity on the Ga-67 scan. Hemidiaphragmatic paralysis is a consequence of phrenic nerve injury.[7] The most common causes are trauma and surgery.[8–10] It may be a clinically silent entity, often discovered only when an elevated hemidiaphragm is found on a chest radiograph ordered for another indication. Physiological bowel activity misinterpreted as pulmonary infection has been reported resulting from a hernia.[11,12] Diaphragmatic paralysis should also be considered as a differential diagnosis of abnormal pulmonary activity on a Ga-67 scan. The patient's history and a review of radiographs for correlation is important for interpreting the Ga-67 scan correctly. The patient was discharged from the hospital after his symptoms improved, but a final diagnosis of infection was not established.