

High Ectopic Kidney Presenting as an Abnormal Liver–Lung Scan: Case Report

C. R. Strakosch, R. A. Cooper, J. C. Wiseman, and I. B. Hales

Royal North Shore Hospital, Sydney, Australia

An unusual cause for a positive liver–lung scan is presented. A cold area between the base of the right lung and the liver in a 78-year-old woman was reported as being due to a subphrenic abscess. This defect was subsequently found to be a right subphrenic kidney.

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Since combined liver–lung radionuclide scanning was first described by Brown (1) in 1965, it has become a valuable means of establishing the presence or absence of subphrenic abscesses. White, Hayes, and Benfield (2) presented a series of 148 scans in which there were 20 true-positive and 2 false-positive results. The latter were so called because of false localization of the abscesses. No cases of false-positive scans for other reasons were presented and the authors further stated that “ascites, pleural effusion, pneumonia, and pulmonary infarction did not interfere with the reliable use of liver–lung scans for the detection and localization of upper abdominal abscesses.”

CASE REPORT

A 78-year-old woman had been hospitalized four times previously for treatment of a gastric ulcer. She underwent vagotomy and pyloroplasty in May 1968, at which time a chest x-ray was reported as showing “elevation of a posterior segment of the right hemidiaphragm.” Because the patient had no symptoms related to this observation, no further action was taken. In March 1975, she was readmitted with hematemesis and melena. She had felt unwell for some time and complained of an aching pain in the left chest wall. Analgesics she had taken for this were thought to have precipitated the hemorrhage.

A chest x-ray revealed a left pleural effusion, and a liver–lung scan was requested in search of a possible subphrenic abscess. The scan was performed with 2 mCi of ^{99m}Tc -macroaggregated ferrous hydroxide. A large defect was apparent between the liver and the right lung base, and this was interpreted

as a right subphrenic abscess (Figs. 1 and 2). However, at laparotomy no subphrenic abscess was found, and a gastrotomy failed to reveal a site of hemorrhage.

The continuing pain in the chest wall was investigated with a bone scan using 20 mCi of ^{99m}Tc -polyphosphate. No bony lesion was seen but the right kidney corresponded with the “subphrenic abscess” seen previously. The site of the kidney was confirmed with a renal scan using 20 mCi of ^{99m}Tc -Fe-gluconate (Fig. 3).

In June 1975, the patient died. Autopsy revealed the cause of death to be an alveolar-cell carcinoma

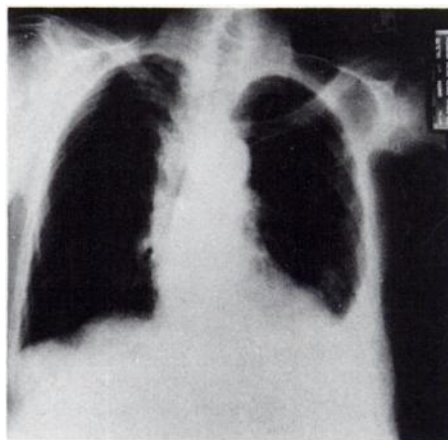


FIG. 1. Chest x-ray shows raised segment of right hemidiaphragm and left basal carcinoma.

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For reprints contact: Christopher R. Strakosch, University of Queensland, Dept. of Medicine, Repatriation Hospital, Greenslopes, Queensland, 4120 Australia.

of the left lung. The right kidney was of normal shape and size but was located immediately beneath the right hemidiaphragm. The right renal artery originated at the usual site on the aorta. Microscopic studies of the kidney were normal. The left kidney was in its usual place and was normal in all respects.

DISCUSSION

High renal ectopy is a rare condition. Schreiter and Amgwerd (3) found 74 cases in the world literature and Campbell (4) found only one case in 13,000 autopsies. Malter and Stanley (5) report that the anomaly occurs four times as often in men as in women and is found on the left side twice as often as on the right. They divided high renal ectopy into three groups according to the relationship of the kidney to the ipsilateral hemidiaphragm:

1. A displaced kidney due to severely traumatic holes or rents in the diaphragm.
2. High renal ectopy with a thin membranous

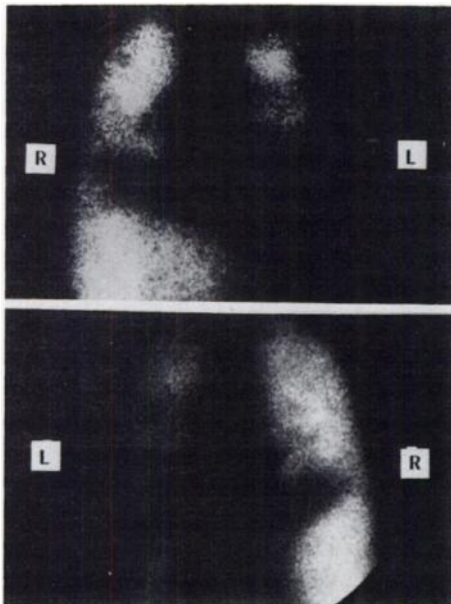


FIG. 2. Liver-lung scintigrams, obtained with ^{99m}Tc -sulfur colloid followed by ^{99m}Tc -macroaggregated ferrous hydroxide, show defect between right lung base and liver. (A) Anterior view; (B) posterior view.

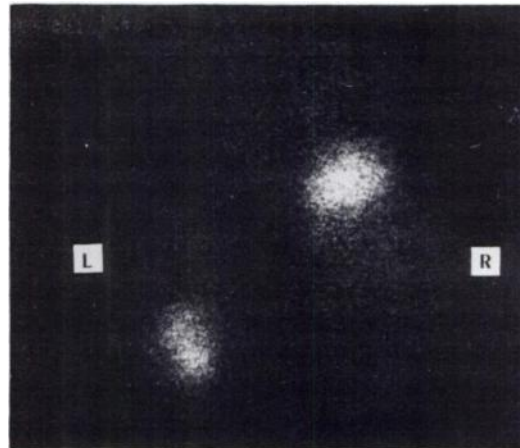


FIG. 3. Renal scintigram taken with ^{99m}Tc -Fe-gluconate. Posterior view illustrates high position of right kidney.

covering from the diaphragm over the superior pole of the kidney.

3. Defective fusion of the posterior elements of the diaphragm, resulting in herniation of the abdominal contents into the chest. According to Williams (6), the kidney is involved in such a hernia in only 0.25% of cases.

Our case was of the second type. This report is the first in which such an ectopic kidney has caused a positive liver-lung scan. Although a rare condition, ectopic kidney should be considered when liver-lung scans are interpreted.

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