

**UNUSUAL ARTIFACT IN LATERAL LIVER SCANS**

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***Focal defects in the upper portion of the liver on right lateral projections of liver and liver-lung scans were found in two women whose scans were performed with the patients supine. The defects were ultimately found to be artifactual due to pendulous breasts interposed between the side of the body and the gamma camera detector.***

One or more focal defects on liver scan are well recognized as usually reflecting disease in or adjacent to the liver (1-3).

Because of the implications of this finding it is important to be aware of the possibility that such a scan defect may at times be created by extraneous objects or unanticipated tissue interposed between the organ and the detector. Artifacts from metallic objects (cigarette lighters, restraining devices, coins, etc.) (4,5) as well as residual barium in the colon have been reported (6). Such defects are particularly likely to occur with the relatively lower gamma emission (140 keV) associated with  $^{99m}\text{Tc}$ .

Liver defects in the anterior projection due to overlying breast (4,5) as well as artifacts on lateral liver scan performed in the supine position (7,8) have been described. We have recently encountered defects due to interposed breast on lateral gamma camera liver and liver-lung scans in two patients. We feel this false-positive finding could readily be misinterpreted.

**CASE REPORTS**

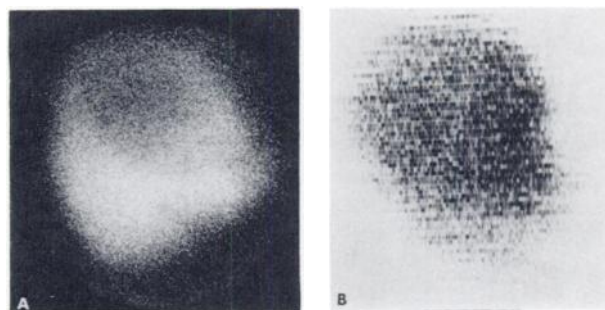
The first patient (ST) was a 39-year-old woman complaining of progressive weakness. The liver scan was part of a workup for possible malignancy-associated peripheral neuropathy. A gamma camera liver scan using  $^{99m}\text{Tc}$ -sulfur colloid was performed. Because of the patient's weakness and general debility

the lateral projection was obtained with the patient supine, the camera to her right side with the crystal at right angles to the table. Care was taken to eliminate possible extraneous artifacts associated with this positioning, e.g., those caused by the mattress. The lateral scan showed a clear defect in the superior part of the liver (Fig. 1A). The anterior projection appeared entirely normal. The patient was returned to the department for repeat scan; this was performed with a rectilinear instrument and it was possible to turn the patient onto her left side for the right lateral projection. No defect was detectable on this rectilinear scan (Fig. 1B).

The second patient (PA) was a 46-year-old obese woman admitted because of an acute arthritis of the right knee from which *Klebsiella* was cultured. Because there was clinical suspicion of a liver or sub-diaphragmatic abscess, liver and liver-lung scans

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**FIG. 1.** (A) Right lateral liver scan performed with Patient ST in supine position demonstrating superior defect. (B) Repeat rectilinear lateral liver scan with patient repositioned to left lateral decubitus position; "defect" has disappeared.

were performed consecutively on the same day with  $^{99m}\text{Tc}$ -sulfur-colloid and  $^{99m}\text{Tc}$  microspheres.

Because of the condition of the patient's right leg, it was not possible for her to be positioned on her side. The lateral projections for both liver and liver-lung scans were therefore obtained with the patient in the supine position as in the first case.

The lateral liver and the lateral liver-lung scans thus obtained both showed similar defects (Fig. 2A). The corresponding anterior projections appeared entirely normal. In order to eliminate the possibility of an artifact the patient was re-examined; when her gown was removed, low pendulous breasts coming to the side of the body when the patient was supine were noted. The lateral liver-lung projection was repeated with the patient still in the supine position while the right breast was held up toward the front of the body; the "defect" disappeared on this repeat lateral image.

#### CONCLUSION

The gamma camera has particular advantages for organ imaging in patients who might have difficulty in cooperating adequately for a rectilinear examination. Women who have pendulous breasts may on lateral gamma camera projections, obtained with the patient supine, show an artifact superiorly in the liver. It is important to recognize such a positional artifact. The false-positive liver scan described can be perplexing and could be misinterpreted.

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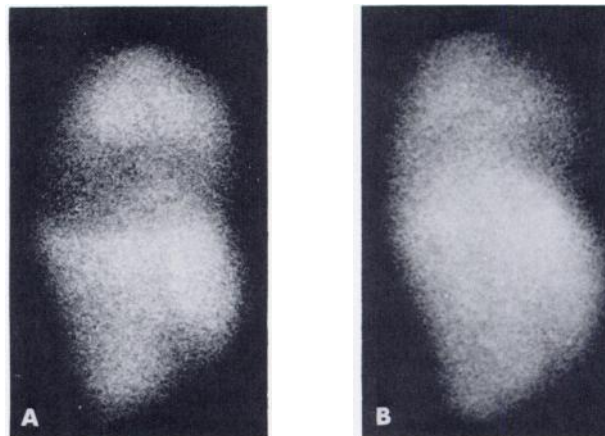


FIG. 2. (A) Right lateral liver-lung scan with Patient PA in supine position showing defect in area of upper liver. (B) Repeat view with right breast held anteriorly shows no such defect.

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