

METASTATIC EXTRAOSSEOUS OSTEOSARCOMA TO THE LIVER:

A CASE DEMONSTRATED BY ^{85}Sr AND $^{99\text{m}}\text{Tc}$ -COLLOID SCANNING

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Extraosseous osteosarcomas are rare tumors which can be differentiated into those arising in organs and those in soft tissue. The theories of pathogenesis are the bases for the separation of the two types. Organ extraosseous osteosarcomas are thought to arise from bone within teratomas with obliteration of all traces of other elements (1,2). The organs most frequently involved are the breast and thyroid gland, with two previously well-documented cases involving the kidney (3,4). Most often seen in the lower ex-

tremities, soft-tissue extraosseous osteosarcomas are thought to arise from bony metaplasia of fibrous tissue (1,5).

The patient presented here had an extraosseous osteosarcoma of the kidney with hepatic metastases. The rarity of this disease and the scintigraphic findings are the bases for this report.

CLINICAL DATA

RS, a 67-year-old white male with chronic peptic ulcer disease, underwent vagotomy and gastrojejunostomy in February 1967. At surgery he was found to have a large mass involving the right kidney, and a right nephrectomy was performed. The pathologic diagnosis was extraosseous osteosarcoma arising in the kidney.

The patient was admitted to Wilford Hall USAF Medical Center in April 1970. He complained of right upper quadrant discomfort and malaise over the previous 4 months. On admission the liver was palpated 11 cm below the right costal margin and percussed to a length of 19 cm to the midclavicular line. The liver edge was very hard to palpation. Chest x-ray and metastatic bone survey were negative. An intravenous pyelogram showed a normal left kidney. There was amorphous calcification noted in the right upper quadrant and a small area of ossification overlying the fifth lumbar vertebra (Fig. 1).

A $^{99\text{m}}\text{Tc}$ -sulfur colloid scan showed two large defects involving the right lobe of the liver (Fig. 2A). This was interpreted as metastatic extraosseous osteosarcoma. A ^{85}Sr scan of the skeletal system was negative for metastatic disease. Eleven days after injection of the ^{85}Sr , a scan of the liver showed increased radioactivity in the right lobe corresponding to the areas of decreased activity with the $^{99\text{m}}\text{Tc}$ -



FIG. 1. Cone down film of right upper quadrant demonstrating irregular pattern of ossification in region of liver.

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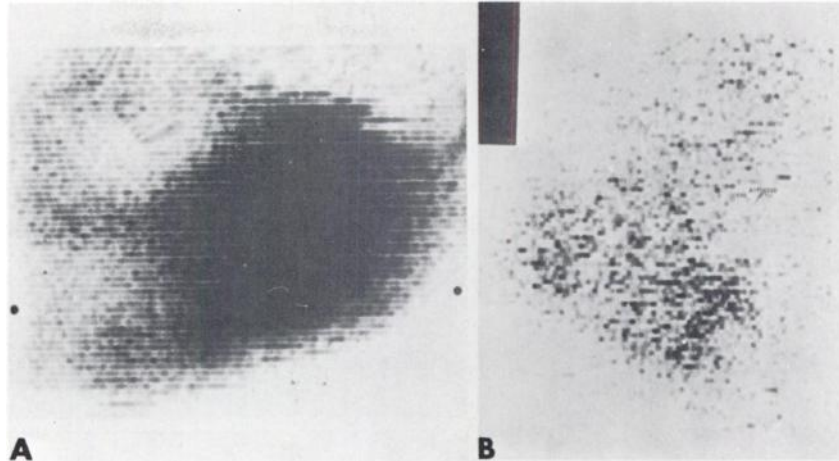


FIG. 2. A shows liver scan with technetium-sulfur colloid demonstrating two large filling defects in right lobe of liver. B is scan of right upper quadrant 11 days after administration of ^{85}Sr demonstrating concentration of isotope in right lobe of liver.

sulfur colloid scan (Fig. 2B). Because strontium metabolism simulates that of calcium and is concentrated in bone, the scan was interpreted as showing accumulation of radiostrontium in the metastatic lesions.

An exploratory laparotomy was performed. The left lobe of the liver was found to be free of tumor, but the entire right lobe was involved. The tumor extended through the capsule of the liver into the retroperitoneal space and invaded the paraspinal muscles and the diaphragm. A calcified mass present in the mesentery of the small bowel was removed for biopsy: the pathologic diagnosis was extrasosseous osteosarcoma. The patient was discharged from the hospital and is now being evaluated for chemotherapy.

COMMENT

Strontium scanning has been used extensively in the detection of metastatic lesions to bone and is particularly useful in patients with negative roentgenograms. The detection of pulmonary metastases (6,7) and osseous metaplasia in soft tissue (8) has been demonstrated with ^{85}Sr and $^{87\text{m}}\text{Sr}$. The case presented here is unusual because the metastasis replaced hepatic cells and formed bone. Hence, the scan showed decreased concentration with Tc-sulfur colloid and increased concentration with ^{85}Sr .

SUMMARY

A patient with extrasosseous osteosarcoma of the kidney with metastasis to the liver is presented. A $^{99\text{m}}\text{Tc}$ -sulfur colloid liver scan demonstrated decreased radioactivity in the metastatic lesions. A scan of the liver with ^{85}Sr showed increased radioactivity in the metastatic foci.

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