nm/ LETTERS TO THE EDITOR

RADIOSTRONTIUM LOCALIZATION IN METASTATIC OSTEOSARCOMA

It is curious that Schall et al (*J Nucl Med* 12:131–133, 1971) overlooked my reports of strontium localization in the pulmonary metastases of osteosarcoma (*Amer J Roentgen* 104:766–769, 1968; *Amer J Roentgen* 109:813–819, 1970). I first found evidence of ^{85}Sr uptake in known pulmonary metastases of osteosarcoma in 1966 and described this case with five others at a meeting of the Central Chapter, Society of Nuclear Medicine in 1967.

I have subsequently used ^{87m}Sr lung scans routinely in children who have newly diagnosed osteosarcoma and in at least one case have detected metastases which were missed on routine chest x-rays. A review of the past five years experience of lung scanning with ^{87m}Sr is now in preparation. With refinements of focusing and elimination of motion artifacts, as by gamma-camera imaging with breath holding, increased precision should be possible. However, the specificity of ^{87m}Sr uptake for bone tumors and bone tumor metastases is not supported by recent observations of isotope uptake into primary soft tissue in the chest (*J Canad Med Assn*, in press), which suggest a specificity for malignant tumors in general.

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THE AUTHORS' REPLY

We have some further comments which may be of interest concerning our recent case report in the *Journal* of the detection of an osteosarcoma metastatic to lung by radiostrontium scintiscanning (*1*).

1. Following the left pneumonectomy, the specimen was counted using a 5 x 4-in. NaI(Tl) scintillation crystal positioned 10 ft above the organ. The amount of ^{85}Sr present in the specimen (adjusted for decay) was 4.0 μCi, or 4% uptake of the original 100 μCi dose. Assuming that 75% of the total weight of the lung (1,500 gm) was due to the metastatic osteosarcoma, then the uptake of ^{85}Sr by the tumor was 3.56 mμCi/gm. This is comparable to the figure reported by Charkes et al (*2*) as the average of three areas at the periphery of a primary osteosarcoma of the tibia in a 13-year-old girl.
2. Using the $T = 3.35$ R cm^2/hr-mCi for the 513-keV gamma ray of ^{85}Sr (*3*), we calculated the potential dose to a pathologist examining the specimen as approximately 6 mrad, assuming that it took ½ hr to complete the dissection and that the tissue was an average of 1 cm from his body. Of course this dose increases exponentially at distances closer to his skin.
3. Rarely does a health physics problem arise from the diagnostic, compared with therapeutic, administration of a radionuclide. This is because only relatively small doses of short-lived tracers (^{99m}Tc, ^{131}I) are used for diagnostic purposes and because an entire organ is usually not surgically removed following the scan (brain, liver). In this case, however, a large amount of tissue was removed which contained a radionuclide with a long half-life (65 days). At our institution the pathology department is notified when this type of surgery is contemplated, and the specimen is clearly labeled as radioactive. In this way, proper precautions can be taken during the examination of the tissue and for proper shielding during extended storage.

Dr. Samuels did indeed describe the uptake of ^{85}Sr and ^{87m}Sr by osteosarcomas metastatic to lung in the December 1968 issue of the *American Journal of Roentgenology*. This was strictly an oversight on our part, and we apologize for it. No insult intended. His second article on the same subject appeared in the August 1970 issue of the same journal, a few weeks after we had submitted our original article to the *Journal of Nuclear Medicine*.

Both of Dr. Samuels' articles are liberally cited in our recent paper summarizing our own experience with radiostrontium scintiscanning to detect metastatic osteosarcomas (*4*). However, in our review of the literature for this study we found a report of a