LETTERS TO THE EDITOR

Imaging of Breast Hormone Dependent Tumors

In the July issue of the *Journal* Spicer et al. observed "If the association between Br-77-E_1 and estrogen receptors can be demonstrated in human patients it may be possible to define, in vivo and preoperatively, which patients have a high probability of responding and which have little chance of responding to endocrine therapy" (*1*). Since 1977 (*2*) we have studied about five patients a week by a similar method in our laboratory.

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REFERENCES

1. SPICER JA, PRESTON DF, BARANCZUK RJ, et al: The biodistribution of Br-77 labeled estrogen: visualization of tissues containing increased estrogen receptors. *J Nucl Med* 20: 761-765, 1979
2. SKROMNE-KADLUBIK G, GALLEGOS MC, CELIS C: Centelleografia de los tumores mamarios hormono-dependientes. *Ginec Obtet Méx* 41: 477-479, 1977

Reply

Dr. Skromne-Kadlubic has brought to our attention his work with I-131 labeled "estrogenic complexes" (*1*). Using "estrogenic complexes" labeled with I-131, seven of seven estrogen receptor positive tumors were visualized while eight of eight estrogen receptor negative tumors were not visualized. These are excellent results especially for high background, low contrast images. It is important to identify the exact molecule localizing in the tumor. Neither the chromatographic uniformity nor the structure of the "estrogenic complexes" is mentioned. Komai and Eckelman (*2*) show a variable stability of the I-131 steroid bond associated with several different steroids. We considered using I-131 as a label but evidence suggests that iodination of a steroid often yields a radiopharmaceutical that is less than optimal (*2,3*). From physical/chemical calculations the C-I bond strength is 53 Kcal/mole while the C-Br bond strength is 67 Kcal/mole. This basic physical/chemical fact is the reason for bromine having chemical superiority over iodine. The stability of our Br-El, Br-E2 is supported by chromatography (*4*). The relative in vitro and in vivo instability of the iodine label is becoming evident; it appears that a nuclide of bromine may be more suitable for use with steroids (*5*).

The exact localization of our radiotracer has yet to be determined. Since breast cancer may be characterized by the presence or absence of estrogen receptors it is reasonable to believe the major determinant of tumor visualization by imaging is the relative concentration of estrogen receptors. Dr. Skromne-Kadlubic's results suggest this may be so. Unfortunately the presence of estrogen receptors is not unique to hormonally dependent breast cancer (*6*). Even with high blood clearance rates the target-to-background ratio is low.

We have imaged four patients, visualizing two of three estrogen receptor positive tumors and not seeing increased Br-77-El activity in the one patient with an estrogen receptor negative tumor. These results have been encouraging but more radiotracer development work and subcellular localization studies must be performed to clarify the method and site of localization.

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REFERENCES

1. SKROMNE-KADLUBIK G, GALLEGOS MC, et al: Centelleografia de los tumores mamarios hormono-dependientes. *Ginecol Obtet Mex* 41: 477-479, 1977
2. KOMAI T, ECKELMAN WC, JOHNSONBAUGH RE, et al: Estrogen derivatives for the external localization of estrogen-dependent malignancy. *J Nucl Med* 18: 360-366, 1977
3. SLAUNWHITE WR, JR, NEELY L: Analysis of estrogens with bromine-82. *Anal Biochem* 5: 133-142, 1963
4. SPICER JA, PRESTON DF, BARANCZUK RJ, et al: The biodistribution of Br77 labeled estrogen: visualization of tissue containing estrogen receptors. *J Nucl Med* 20: 761-765, 1979
5. MAZAITIS JK, GIBSON RE, KOMAI T, et al: Radioiodinated estrogen derivatives. *J Nucl Med* 21: 142-146, 1980
6. GOLOMB HM, THOMSEN S: Estrogen receptor: Therapeutic guide in undifferentiated metastatic carcinoma in women. *Arch Intern Med* 135: 942-945, 1975

Serum TSH Levels in Therapy of Thyroid Carcinoma

With regard to radioiodine therapy for thyroid cancer Hilts et al. (*1*) draw conclusions that their data do not support. Their data indicate how long it takes to achieve an elevated serum TSH level after withdrawing thyroid hormone and conclude that radioiodine therapy should be given at that time. They apparently do not consider that it is desirable for residual thyroid cancer to be subjected to the influence of high TSH levels for some period of time (3 wk) to assure that uptake of the radioiodine is increased as much as possible. It is for this reason that the accepted protocol is a period of 6 wk off T_4 before treatment, approximately 3 wk to deplete the thyroid hormone from the circulation and 3 wk to permit high TSH stimulation of the residual tumor. By shortening the period of hypothyroidism, it is possible that Hilts et al. are increasing the probability that their patients will have to comply with "repeated courses of radioiodine to ablate residual or metastatic cancer." Perhaps they would be able to successfully eliminate residual uptake in most patients with a single treatment as has been our experience. The use of diuretics and diet to deplete stable iodine prior to radioiodine therapy may be helpful in this regard (*2*).

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REFERENCES

1. HILTS SV, HELLMAN D, ANDERSON J, et al: Serial TSH