following maternal I-131 therapy, with a review of hazards of environmental radioisotope contamination. *J Pediat* 1963;62:132–146.
22. Hamill G, Jarman J, Wynne M. Fetal effects of radioactive iodine therapy in a pregnant woman with thyroid cancer. *Am J Gynec Obstet* 1961;81:1018–1023.
23. Russell K, Rose H, Starr P. The effects of radioactive iodine on maternal and fetal thyroid function during pregnancy. *Surg Gynec Obstet* 1957;104:560–564.
24. Pfannenstiel P, Andrews G, Brown D. Congenital hypothyroidism from intra-uterine I-131 damage. In: *Current topics in thyroid research, proceedings of the fifth international thyroid conference.* New York: Academic Press; 1965.
25. Mossman K. Medical radiodiagnosis and pregnancy: evaluation of options when pregnancy status is uncertain. *Health Phys* 1985;48:297–301.

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Selected manuscripts from the issues of *The Journal of Nuclear Medicine* published 15 and 30 years ago.
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Iodinated Bleomycin: An Unsatisfactory Radiopharmaceutical for Tumor Localization

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Bleomycin is widely used for cancer chemotherapy. Cobalt-57-labeled bleomycin localizes in tumor tissue and is a useful radiopharmaceutical for clinical tumor imaging. However, the long physical half-life of ^{57}Co has discouraged its widespread acceptance. Bleomycin compounds labeled with radionuclides of indium, copper, gallium, and technetium are less stable chemically and give less satisfactory results than ^{57}Co-bleomycin. As an alternative to metal binding, we studied the properties of iodinated bleomycin. Our results suggest that it will not be satisfactory for tumor imaging.

Iodination

Bleomycin was iodinated both directly in the imidazole ring and indirectly by reaction with N-succinmidyl 3-(4-hydrozyphenyl) propionate. All the direct iodinations were performed with ^{125}I in 0.1 *N* NaOH and chloramine-T. In a typical reaction, 70 μl of 1 *M* phosphate buffer was added to the vial containing the ^{125}I. The bleomycin and chloramine-T then were added. The solution was mixed for 60 sec and then $Na_2S_2O_5$ was added to reduce any remaining iodine. The yield was calculated as the percent of total iodide incorporated into bleomycin, and from this and the initial molar ratios of iodide to bleomycin the percentage of labeled bleomycin molecules was calculated.

The N-succinmidyl 3-(4-hydrozyphenyl) propionate was iodinated by the method of Bolton and Hunter. Iodination also was attempted using lactoperoxidase.

Cobalt-57-bleomycin was prepared by adding carrier-free $^{57}CoCl_2$ to bleomycin. To test the effect of chelated cobalt on the distribution of iodinated bleomycin, equimolar amounts of $^{57}CoCl_2$ and directly iodinated bleomycin were mixed.

Tissue Distribution Studies

The distributions of the radiolabeled bleomycin compounds were determined in female Fischer-344 rats implanted with 13762 mammary adenocarcinoma.

Discussion

Our results indicate that the iodinated bleomycins are unsatisfactory for tumor imaging. Although both directly and indirectly iodinated bleomycin were stable in vitro, neither compound was stable in vivo, and by 24 hr after injection in rabbits, nearly half of the remaining plasma activity was in the form of iodide. The tumor-to-blood ratios achieved with iodinated bleomycins were substantially lower than those with ^{57}Co-bleomycin. The iodinated bleomycin concentrations in both tumor and blood decreased with time from 2 to 24 hr, in contrast, the tumor concentration of ^{57}Co-bleomycin was essentially the same at 2 and 24 hr, while the blood concentration decreased. Thus, the tumor-to-blood ratio for ^{57}Co-bleomycin increased with time, while this ratio for the iodinated compounds changed very little. Addition of carrier cobalt to iodinated bleomycin did not materially enhance its relative tumor concentration.

The unsatisfactory tumor localization of iodinated bleomycin and bleomycin labeled with other metal radionuclides suggests that cobalt-labeled bleomycin has unique properties, most likely relating to the chelated cobalt, which are important in determining the high tumor-to-nontarget ratios achieved with this radiopharmaceutical. ■

MAY 1961

President's Annual Report

Titus C. Evans, President, The Society of Nuclear Medicine

We have beome a large and influential Society. We must realize our responsibility and conduct the affairs and policies for the common good. In addition to our original aim of exchanging information about techniques and uses of radioisotopes, we are now confronted with requests for advice and cooperation from other societies. Also, the need for training and standards in the field has become evident. Therefore, we should be pleased that we can now be of help to others, but we must remember that our chief reason for being a society is to promote scientific and investigational progress. Individual professional gains must be secondary, and local problems should be settled in light of national policy.

During the past year, the *Journal* finished its "shakedown cruise" and is now "At Sea Under Full Steam." Our finances are in good shape, but we must be prepared to expect additional expenses as pages in the *Journal* increase in the coming years.

The meetings of the Executive Committee have been extremely well attended and all chapters have been represented. The spirit and efficiency with which the committees worked on the affairs of the Society is worthy of deep appreciation.

I wish to express my confidence in the new President, Dr. Lindon Seed, and to congratulate him and the Society as he takes over and to assure him of my and your continued support during the coming year. ■