

Radiation Injury After Interstitial Injection of Iodocholesterol

TO THE EDITOR: In the May 1991 issue of *JNM*, Breen and Driedger reported on a radiation injury following the interstitial injection of [131 I]iodocholesterol (1). The topic of inadvertent extravascular injections of radiopharmaceuticals was further elaborated by Hoop in an editorial (2) in the same issue. It was a timely reminder because nuclear medicine is so dominated by ^{99m}Tc with its short half-life and gamma emissions that it is easy to forget the possibility of radiation injury. This forgetfulness is further aided by the fact that most other radionuclides are given in much smaller doses than ^{99m}Tc .

In June 1991, shortly after the May issue of *JNM* had arrived, a thallium stress test was performed on a 60-yr-old female patient. The re-injection dose of approximately 1 mCi of thallium was given extravascularly. With the information of the *JNM* article still fresh in mind, the following preventative measures were taken: one ampule (1500 U) of Hyaluronidase was diluted according to the manufacturer's instructions and injected subcutaneously near the site of the thallium injection. When the patient was examined the next day (19 hr later), there was no evidence of the faulty injection from the previous day.

This incident is reported because I am not aware of the use of Hyaluronidase other than hypodermoclysis or local anesthesia. Articles on the topic of interstitial injections usually describe the incident and expand on dosimetric calculations, but do not proffer "therapeutic" suggestions. Our single experience does not prove the efficacy of Hyaluronidase and a study to verify the benefits of Hyaluronidase in extravascular injections of radiopharmaceuticals can only be done in animal experiments. If, however, other nuclear medicine departments decided to use Hyaluronidase and report their experience in this journal, it should not be long before its usefulness is determined.

REFERENCES

1. Driedger AA, Breen SL. Radiation injury from interstitial injections of [131 I]iodocholesterol. *J Nucl Med* 1991;32:892.
2. Hoop B. The infiltrated radiopharmaceutical injection: risk considerations [Editorial]. *J Nucl Med* 1991;32:890.

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REPLY: The incident related by De Zwart concerning the redistribution of an extravascular injection of ^{201}Tl following local administration of Hyaluronidase is probably not comparable to the situation that we described concerning the extravasation of [131 I]iodocholesterol.

Unlike iodocholesterol, thallium is a water soluble ion. By way of comparison to intentional interstitial injections, one would anticipate complete absorption of thallium from the injection site in a relatively short time. In this uncontrolled situation, it is not possible to say what the effect of the Hyaluronidase was. The

likelihood that a local radiation injury could occur from an interstitial injection of thallium- or a technetium-based radiopharmaceutical is remote. Therefore, we would urge caution to nuclear physicians lest we overtreat these situations. Hyaluronidase is a foreign protein and allergic reactions are known to occur in response to its administration. Since iodocholesterol is not water soluble, we would not anticipate that an extravascular concentration would be mobilized by Hyaluronidase.

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Scanning the Thyroid with Technetium-99m-Pertechnetate

TO THE EDITOR: In two previous papers published in *The Journal of Nuclear Medicine*, it was reported that ^{201}Tl and ^{99m}Tc -TBI could be successfully used to visualize suppressed thyroid tissue as an alternative to post-TSH stimulation scanning (1,2). Thyroid perfusion scanning with [^{99m}Tc]pertechnetate is being used in our department for this purpose. In the patients we have studied so far, we have demonstrated extranodular suppressed tissue with [^{99m}Tc]pertechnetate perfusion scanning (Figs. 1 and 2).

Although in the studies reported in the *Journal* that suppressed thyroid tissue had been visualized, depending upon the uptake mechanism, [^{99m}Tc]pertechnetate perfusion scanning demonstrates the suppressed tissue due to its vascularization. If the purpose is to demonstrate suppressed tissue irrespective of its function, thyroid perfusion scanning can be used successfully.

Thyroid perfusion scanning with [^{99m}Tc]pertechnetate is an inexpensive, fast and easily performed technique for the visualization of suppressed thyroid tissue. In routine clinical practice, for patients with palpable nodules and suspected hyperthyroidism, radiation exposure will be decreased using two phases: (1) the perfusion phase at the first minute and (2) the functional phase at the 20th minute by scanning the thyroid with [^{99m}Tc]pertechnetate.

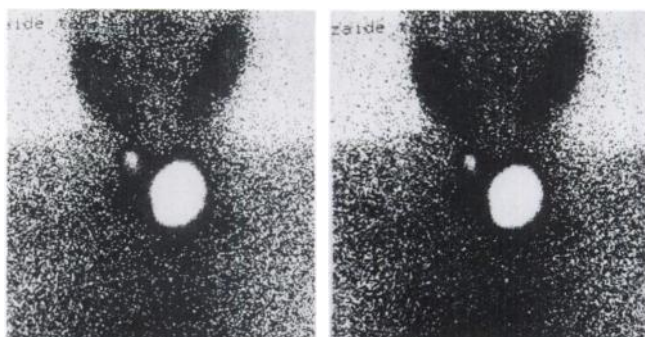


FIGURE 1. Image obtained at 20th minute. Left lobe of the thyroid is visualized, but the right one is not because of suppression.