

5. Henderson MA. *Living with Risk: The British Medical Association Guide*. Chichester: John Wiley & Sons, 1982.

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REPLY: The letter by Dr. Patterson represents the type of discussion of this important topic which we were hoping to generate. It contains a number of interesting perspectives with which we are essentially in agreement, and which are contained in the article (1).

We are not advocating a dramatic move towards higher doses to volunteers, but rather indicating an upper boundary to such doses. As is pointed out in the article, average doses from nuclear medicine procedures are typically around 5 mSv, and will likely remain at that value if the proposals made in the paper are accepted. Furthermore, we do not advocate that the careful judgement of an ethics committee be eliminated, but rather that we provide more reasoned guidelines when deliberations on the subject of administered activity to volunteers take place.

Reference

1. Huda W, Scrimger JW. Irradiation of volunteers in nuclear medicine. *J Nucl Med* 1989; 30:260-264.

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Hyperthyroidism After Head and Neck Irradiation

TO THE EDITOR: I question the conclusions of the article published in the *Journal of Nuclear Medicine* entitled "Hyperthyroidism with Low Radioiodine Uptake After Head and Neck Irradiation for Hodgkin's Disease (1)".

This is a situation in which *hypothyroidism* is common and deserves no comment. On the contrary *hyperthyroidism* has not been described. However the Petersen, Keeling and McDougall description is suspect because of the recognized iodine excess mainly from lymphangiography. Due attention to this iodine excess has not been made and no total iodine in the serum or urine of the patients is shown.

For us these observations are typical of the effect of excess iodine on thyroid hormonogenesis (2).

Hyperthyroidism is but an example of what can happen after iodine excess (3).

References

1. Peterson M, Keeling CA, McDougall JR. Hyperthyroidism with low radioiodine uptake after head and neck

irradiation for Hodgkins disease. *J Nucl Med* 1989; 30: 255-257.

2. Fradkin J, Wolff J. Iodide-induced thyrotoxicosis (Jod-basedow). *Medicine* 1983; 62:1.

3. Savoie JC, Massin JP, Thomopoulos P, Leger F. Iodine-induced thyrotoxicosis in apparently normal thyroid glands. *J. Clin Endocr Metab* 1975; 41:685.

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REPLY: In response to Dr. Savoie's comments, it has not escaped our attention that hypothyroidism is common after head and neck irradiation. Indeed, we have published data concerning this, Constine et al. (1). Dr. Savoie states that hyperthyroidism has not been described, but indeed it has. First, by my colleagues, Wasnich et al. (2) and it has been described by us following hypothyroidism (3).

The reason for our current communication was to present three patients who became hyperthyroid and subsequently hypothyroid after head and neck irradiation. Two of the patients have remained permanently hypothyroid for several years at this juncture. We accept that hyperthyroidism can occur after iodine loading, but it is quite unusual in the West Coast of the United States where iodine in the diet is substantial. We believe this sequence of events and the time course in our patients were such that it is unlikely that iodine played a role, although in our original discussion we acknowledge that this probably was not excluded entirely.

We have recently seen a woman with Hodgkin's disease who had mantle radiation. She had a similar history of general malaise, palpitations, and sweating. Thyroid function tests drawn to exclude what was thought to be a low probability of thyroid dysfunction showed a high FT4, suppressed TSH, and radioiodine uptake at 24 hr of less than one percent. The patient had not had an iodine load for more than 1 year. This strengthens our view that this is an important entity which should be looked for in patients who have had mantle radiation.

References

1. Constine LS, Donaldson SS, McDougall IR, Cox RS, Kaplan HS. Thyroid dysfunction after radiotherapy in children with Hodgkin's disease. *Cancer* 1984; 53:46-51.

2. Wasnich RD, Grument FC, Payne RO, et al. Graves' ophthalmopathy following external neck irradiation for nonthyroidal neoplastic disease. *J Clin Endocrinol Metab* 1973; 37:703-711.

3. Constine LS, McDougall IR. Radiation therapy for Hodgkin's disease followed by hypothyroidism and then Graves' hyperthyroidism. *Clin Nucl Med* 1982; 7:69-70.

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