Permanent Hypoparathyroidism following Radioiodine Treatment for Hyperthyroidism

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Abstract
Persistent hypoparathyroidism following ¹³¹I treatment is a rare but recognized complication. A case is presented, where a relatively small dose of ¹³¹I produced persistent hypocalcaemia.

INTRODUCTION
Persistent hypoparathyroidism following ¹³¹I treatment is a rare but recognized complication. A case is presented, where a relatively small dose of ¹³¹I produced permanent hypoparathyroidism.

CASE REPORT
A 36 years female diagnosed as hyperthyroid in 1989 was on carbimazole until seen in June 2000. On stoppage of carbimazole, hyperthyroidism recurred and she was advised to have radioiodine treatment. Subsequently, the patient had ¹³¹I uptake study which showed a one hr. and 24 hrs. uptake of 22% and 72% respectively and the thyroid gland was approximately 10g in weight. She then received 5 millicuries (185 MBq) of ¹³¹I on 17.9.2000. Two months later, the patient developed severe carpopedal spasm and her plasma total calcium decreased to 6.4 mg/dl (Normal range 8.5-10.5 mg/dl). She was hospitalised for 4 days in November 2000, her free T3 was 1.4 pg/ml (Normal range 1.4-4.2 pg/ml), free T4 was 1.6 ng/dl (Normal range 0.86-2.4 ng/dl), TSH was 1.0 mcu/ml (Normal range 0.23-4.0 mcu/ml) and intact PTH was 1.00 pg/ml (Normal range 12-72 pg/ml). She was immediately started on oral calcium and alfacalcidol; by 24 hrs., the calcium rose to 7.2 mg/dl and plasma calcium was subsequently measured every 2 weeks.

From March to June 2001, the patient received 1 mcg of alfacalcidol and calcium lactate 10g daily plus injection cholecalciferol 300,000 I.U. every 2 weeks. However, by June 2001 her calcium rose to only 7.7 mg/dl. The cholecalciferol does was then increased to 600,000 units every 2 weeks and with this dose, the calcium level rose to 8.3 mg/dl. In July 2002, the patient had a relapse of hyperthyroidism and Free T4 rose to 3.5 ng/dl, and Free T3 rose to 8.0 pg/ml. She was restarted on carbimazole 10mg daily and is presently doing well.

DISCUSSION
Hypocalcaemia following radiation has been commonly described in the context of thyroid carcinomas where large doses of ¹³¹I are customarily administered postoperatively. It has also been reported in a case of external irradiation 100 millicuries (3700 MBq) of ¹³¹I administered to a patient of papillary thyroid carcinoma. To date, there are three cases of hypocalcaemia following doses up to 4 millicuries (185 MBq) of ¹³¹I have been reported; two that had temporary hypocalcaemia of 6 weeks duration while one patient had persistent hypocalcaemia. The onset of symptoms varied from 5 days to 6 months.

Hypocalcaemia has been postulated to occur following release of irradiated calcitonin from thyroid tissue. It has been suggested that patients with poor preexisting poor parathyroid reserve are more likely to develop hypocalcaemia. Low calcium and high PTH levels are common in India (Mithal A, personal communication). It is possible that there are many persons with mild degrees of secondary hyperparathyroidism in the community. These patients have a poor parathyroid reserve and are susceptible to parathyroid injury leading to primary hypoparathyroidism. What is remarkable is that although ¹³¹I uptake was high and thyroid was estimated to be 10g, a relapse of hyperthyroidism occurred. There is no good explanation for the subsequent development of permanent hypoparathyroidism in this particular case. Current literature on this topic does not offer any possible explanation either.

CONCLUSION
The patient described had persistent hypocalcaemia due to hypoparathyroidism after ¹³¹I treatment, while her hyperthyroidism later relapsed.

REFERENCES
2. Glazebrook GA. Effect of decicurie doses of radioactive

Announcement

**International Colloquium of Diabetes and Pregnancy**, Organized by Dr. V Seshiah Diabetes Care and Research Institute, December 11-12, 2004.

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Announcement

**Second Madras Diabetes Research Foundation (MDRF) - American Diabetes Association (ADA), Postgraduate Course on Diabetes, at Chennai, India, September 2004**. The second MDRF-ADA Postgraduate Course on Diabetes will be held from 24th to 26th September 2004 at Chennai, India. The meeting will be hosted by the Madras Diabetes Research Foundation, Chennai.

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Also visit our website at www.mdrf-ada.com for details regarding registration charges etc.

A complete monogram on fluid, electrolyte and acid base disorder entitled, "*Practical Guidelines on Fluid Therapy*" by **Dr. Sanjay Pandya** is available. This handy user-friendly book is aimed to provide up-to-date practical information to UG and PG students and every clinician. Fluid therapy of medical, surgical and pediatric patients in separate chapters. 5000 copies sold in 16 months. Price of the book is Rs.195/- (+ Rs.35/- Postal charges).

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