

Radioiodine Induced Hypoparathyroidism in a Patient of Hyperthyroidism: A Case Report.

N. S. Neki

Department of Medicine, Govt. Medical College and Guru Nanak Dev Hospital, Amritsar, India

Abstract: Hypoparathyroidism is a rare complication which can occur 3-45 years after radioiodine therapy. A case of Hypoparathyroidism following relatively small dose of I¹³¹ given for the management of hyperthyroidism is being reported here for its rarity.

INTRODUCTION

Hypoparathyroidism following I¹³¹ therapy in a patient of hyperthyroidism is a rare but recognized complication. A rare case is reported here where a relatively small dose of I¹³¹ led on to development of hypocalcaemia.

CASE REPORT

A 40 years old non-pregnant lady presented with complaints of palpitation, sweating, and intolerance to heat and marked loss of weight. She was diagnosed to be a case of hyperthyroidism and was put on carbimazole. After 2 months of carbimazole, she developed hypersensitivity reactions to it and it was stopped. Subsequently she was considered for RAI (radioactive iodine) therapy. Her RAI study showed a one hour and 24 hours uptake of 25% and 75% respectively and the thyroid gland measured about 11 gm. She was given 5 millicuries of I¹³¹. She presented with severe carpopedal spasm following 3 months of RAI administration and her plasma total calcium decreased to 6.1 mg/dl (normal range 8.5-10.5 mg/dl). She was admitted in the hospital and subjected to various laboratory investigations which revealed Hb 10.2 gm%; TLC 10800/mm³; DLC P68, L30, E2, E0; Blood urea 35 mg/dl; Serum creatinine 1.1 mg/dl; X-ray chest NAD; ECG revealed sinus tachycardia; T3 1.4 pg/ml (normal range 1.4-4.2 pg/ml), free T4 1.4 ng/dl (normal range 0.86-2.4 ng/dl), TSH 1.2 mcu/ml (normal range 0.23-4.0 mcu/ml) and intact PTH was 1.5 pg/ml (normal range 12-72 pg/ml). She was immediately put on oral calcium and alfacalcidol. On the next day, her plasma calcium increased to 7.3 mg/dl and then the plasma calcium was estimated every 2 weeks. She received calcium lactate 10 g daily, alfacalcidol 1 ug daily and inj. Cholecalciferol 3 lakh I.U every 2 weeks for 4 months. At the end of 4 months, her plasma calcium increased to 7.5 mg/dl only. Further she was put on 6 lakh I.U units of cholecalciferol every 2 weeks, which increased calcium levels to 8.2 mg/dl. At the end of 5 months, she had a relapse of hyperthyroidism and free T₃ rose to 3.4 ng/dl, and free T₄ rose to 8.2 pg/ml. She was again put on carbimazole 10 mg daily and responded well. She is now on regular follow up without any ill effects.

DISCUSSION

Hypocalcemia following radiation has been commonly reported in patients of thyroid carcinomas¹ where larger doses of RAI therapy are given postoperatively. It has also been reported following 100 millicuries radiation of I¹³¹ in a patient of papillary thyroid carcinoma².

Few cases of hypocalcemia both permanent and temporary ones following 4 millicuries of RAI therapy have been reported in the literature^{1,3,4,5,6}. The onset of symptoms varied from 5 days to 6 months^{1,3,6}, while 2 months⁵ and more than 3 years⁷.

The release of irradiated calcium from thyroid tissue leads to development of hypocalcaemia. Other factors include poor pre-existing parathyroid reserve², which makes the individuals to develop primary hypoparathyroidism on account of parathyroid injury.

CONCLUSION

Following I¹³¹ administration to a patient of hyperthyroidism, the development of hypocalcemia is due to hypoparathyroidism, which is a rare manifestation. Hence the case report.

REFERENCES

1. Winslow CP, Meyers AD. Hypocalcaemia as a complication of radioiodine therapy. *Am J Otolaryngol* 1998; 6: 401-3.
2. Glazerbrok GA. Effect of decicure doses of radioactive iodine I¹³¹ on parathyroid function. *Am J Surgery* 1987; 154: 36-73.
3. Freeman M, Giulianai M, Schwartz E. Acute Thyroiditis, thyroid crisis and hypocalcaemia following radioactive iodine therapy. *New York State J Med* 1969; 2036-41.
4. Burch WM, Possilico JT. Hypoparathyroidism after I-131 therapy with subsequent return of parathyroid function. *J Clin Endocrinol Metab* 1983; 57:3987-401.
5. Chatterjee S. Permanent hypoparathyroidism following radioiodine treatment for hyperthyroidism. *Journal of Association of Physicians of India* 2004; 52:421-22.
6. Jilalai I, Pillay NL, Asmal Ac. Radio-iodine induced hypoparathyroidism: a case report. *South African Med J* 1980; 58:939-40.
7. Norman Lavin (ed). *Manual of Endocrinology and Metabolism*, 3rd ed. California: Lippincott Williams and Wilkins 2002; 463-64.
8. Harden R, McG Harrison MT, Alexander WD. Phosphate Excretion and parathyroid function after radio-iodine therapy and thyroidectomy. *Clin Sci* 1963; 25: 27-36.