# RADIOTHERAPY FOR NASOPHARYNGEAL CARCINOMA: A RARE CAUSE OF HYPOPITUITARISM

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## INTRODUCTION

Radiotherapy to the head and neck area is the standard therapy used for the treatment of nasopharyngeal carcinoma. Hypopituitarism is a well-known late complication of cranial radiotherapy. Although very rarely, it may be observed following radiotherapy to the head and neck area, as well.

## CASE REPORT

A 53-year-old man was referred to our endocrinology department for hyponatremia and low free thyroxine with normal thyroid- stimulating hormone levels. His medical history was remarkable only for the nasopharyngeal carcinoma that had been treated with radiation and chemotherapy seven years before admission. He had been hospitalized many times due to hyponatremia in other hospitals within the last six months. He had been discharged every time after the correction of his serum sodium levels. On physical examination, he was pale and lethargic. Blood pressure was 85/50 mmHg, heart rate was 74 bpm. His random cortisol level was 3 µg/dl. Besides cortisol, his testosterone, luteinizing hormone and insulin-like growth factor-1 levels were also below normal limits. Thyroid , adrenal function tests and anterior pituitary hormone levels supported the diagnosis of panhypopituitarism (table 1). Magnetic resonance imaging (MRI) exhibited normal findings in his pituitary with no sign of empty cella and metastases (figure 1). Based on these results, the patient was diagnosed to have panhypopituitarism due to the radiotherapy that he once had for his nasopharyngeal carcinoma. Hormonal substitution therapy with IV glucocorticoids and levothyroxine was started sequentially. His serum sodium level gradually rose up to normal limits. He no longer required intravenous sodium replacement. Patient's clinical symptoms were resolved in the period of one month. On the second weeks of treatment his sodium and free T4 levels were normal (table2).

**Figure 1.** Magnetic resonance imaging of the pituitary demonstrating normal anatomy with no evidence of metastases or empty cella.

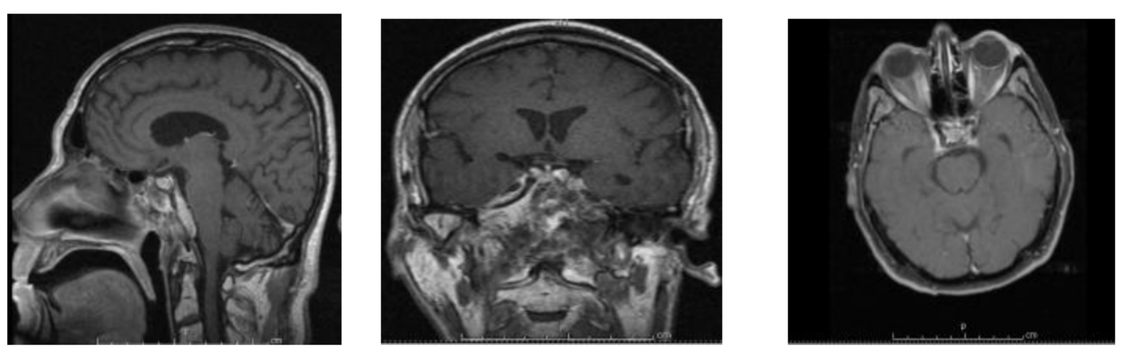

**Table 1.** Laboratory evaluation of thyroid , adrenal functions and anterior pituitary hormones

| Test Name (unit) | Result | Reference Range |
|---|---|---|
| **TSH (uIU/Ml)** | 2.2 | 0.4-4.67 |
| **Free T3 (pmol/L)** | 2.24 | 3.5-6.5 |
| **Free T4 (pmol/L)** | 8.87 | 11.5-22.7 |
| ***FSH (mIU/mL)*** | 2.84 | 1.42-15.4 |
| ***LH (mIU/L)*** | 1.06 | 1.24-7.8 |
| ***Prolactin (ng/mL)*** | 7.57 | 2.1-17.7 |
| ***GH (ng/mL)*** | 0.24 | 0-3 |
| ***IGF-1 (ng/mL)*** | 43.3 | 87-238 |

**Table 2**: Serum free T4 and sodium levels after treatment

| *Test Name (unit)* | *Before Treatment* | *After treatment* |
|---|---|---|
| *Free T4 (pmol/L)* | *8.87* | *13.11* |
| *Sodium (meq/L)* | *120* | *135* |

## CONCLUSION

Hyponatremia is often seen in patients with adrenal insufficiency but the diagnosis of hypopituitarism in hyponatremic patients is often overlooked and these patients had been admitted to the hospitals many times before the underlying hypopituitarism was diagnosed. Radiotherapy induced hypopituitarism is well known late time side effect after chemo-radiotherapy of nasopharyngeal cancer. Taking careful medical history plays the pivotal role in making the correct diagnostic approaches and it should be differentiated from primary hypothyroidism, starting treatment with thyroid replacement in radiotherapy induced hypopituitarism may result with significant morbidity even mortality.