

## Failure of radioiodine treatment in Graves' disease intentionally caused by a patient: Suspected Munchausen syndrome

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We experienced a case with Graves' disease in which radioiodine treatment failed probably because of intentional spitting out of capsules of radioactive iodide. Chemical analysis of the substances collected from the trash in the treatment room demonstrated that its profile was the same as that of the capsules for radioiodine administration. Measurement of the iodine concentrations in a blood sample obtained at 24 h after the administration of radioiodine indicated that the patient showed iodine excess. These findings suggest that this may be a case of Munchausen syndrome.

**Key words:** Graves' disease, <sup>131</sup>I, treatment failure, Munchausen syndrome

### INTRODUCTION

THE MAJORITY of patients with Graves' disease can be cured by the initial administration of radioiodine, and even those not cured usually show amelioration of their symptoms.<sup>1</sup> The efficacy of radioiodine therapy is proportional to the radiation dose to the thyroid, which is related to the amount of radioiodine administered, thyroid uptake, effective half-life in the thyroid, and weight of the thyroid.<sup>1,2</sup> Treatment failure may be caused by incidents such as inadvertent ingestion of iodine contaminants and the use of iodinated radiographic contrast materials. In this report, a case of treatment failure is described, which was apparently caused by the patient intentionally.

### CASE REPORT

A 42-year-old woman with Graves' disease was referred to our department for radioiodine treatment because of poor clinical control with thiamazole treatment.

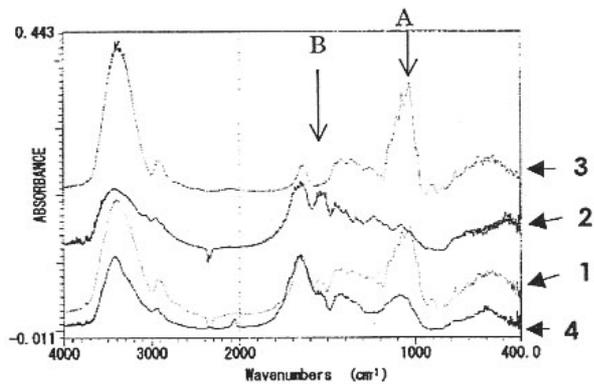
Thyroid iodine uptake measured with <sup>123</sup>I, after refraining from ingesting foods containing iodine for 2 weeks and withdrawing the administration of thiamazole, was 5%. The free T3 was 8.28 pg/ml (normal, 2.20–4.30 pg/ml), free T4 was 3.98 ng/dl (normal, 0.80–1.80 ng/dl), thyroid stimulating hormone level was <0.01 μU/ml (normal, 0.27–4.65 μU/ml), and thyrotropin binding inhibitor immunoglobulins were 61% (normal, <10%), respectively. Because the result of uptake measurement appeared to be an artificial error, the uptake was measured again with a tracer dose of <sup>131</sup>I after another 2-week restriction of dietary iodine intake. The second measurement showed an uptake of 54% at 24 h; Consequently, she received 370 MBq of <sup>131</sup>I, which would have delivered approximately 17,000 cGy to the thyroid gland of 25 g with an assumption of an effective half-life of 5 days. In contrast to this therapeutic plan, thyroid uptake of <sup>131</sup>I was almost at the background level at 24 h. We obtained a blood sample to assay for its iodine concentration after obtaining informed consent. She was discharged from hospital on the next day.

We found that tissues discarded in the trash of the isolation room used for her treatment were contaminated with a high level of radioactivity, which exceeded the range measurable with a common GM survey meter. On the surface of the tissues, substances appearing to be fragments of capsules containing radioactive iodine were

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**Fig. 1** Analysis of the substances collected from the trash in the treatment room. 1, Profile of a capsule containing glucose as an additive; 2, profile of a capsule containing no glucose; 3, profile of glucose; and 4, profile of the collected substances. The peaks A and B are specific for glucose and the capsule, respectively. The profile of the substances composed of peaks A and B, resembling profile 1. These results indicate that the collected substances were fragments of the capsules of radioactive iodine administered to the patient.

noticed. These were chemically investigated after waiting for radioactive decay of 16 physical half-lives. Briefly, samples were processed with the KBr pellet method and were subsequently analyzed with the Fourier transform infra-red spectrometer. The profile of the samples collected from the trash was the same as that of the capsule for the dosage of radioiodine (Fig. 1). Furthermore, measurement of iodine contents in the blood sample obtained at 24 h after the administration of radioiodine indicated that she was definitely in an iodine excess condition: the total iodine concentration was 13.1  $\mu\text{g/dl}$  (normal, 4.0–9.0  $\mu\text{g/dl}$ ), the protein-bound iodine was 8.1  $\mu\text{g/ml}$  (normal, 4.0–8.0  $\mu\text{g/dl}$ ), and the inorganic iodine was 5.0  $\mu\text{g/dl}$  (normal, 0.0–1.0  $\mu\text{g/dl}$ ).

## DISCUSSION

Two major aforementioned proofs based on the analyses of the blood sample and the trash indicate, with little doubt, that treatment failure in this case was intentionally caused by the patient. The strange result of the first iodine uptake measurement before the treatment may have been a consequence of the same reason. She claimed that she did not take foods containing large amount of inorganic

iodine, and continued the identical restriction throughout the period from the first measurement of thyroid uptake to the administration of therapeutic dose of  $^{131}\text{I}$ . Another evidence supporting this conclusion is that, in most cases treated with radioiodine in our therapeutic unit, linens and garments are usually contaminated with  $^{131}\text{I}$  at various levels, but no radioactive contaminants except in the trash were found in this particular case.

Her clinical course indicates that this may be a case of Munchausen syndrome.<sup>3</sup> Munchausen syndrome is a condition in which patients repeatedly seek medical care for factitious illnesses. These patients are willing to undergo expensive, invasive, and risky procedures to evaluate their simulated illness. The patient presented in the current report underwent thiamazole treatment for one and a half years in the Department of Internal Medicine in our hospital. The dose of thiamazole was 60 mg/day at the highest, a dose considerably higher than usually administered, raising a suspicion that she did not take them as prescribed.

In summary, a strange case with Graves' disease is presented in which a failure of radioiodine treatment was caused intentionally by the patient. Measurement of iodine concentrations in the blood obtained at 24 h after the administration of radioiodine and chemical analysis of the trash support this conclusion. This type of treatment failure has never been reported so far in radioiodine therapy.

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