Relapse of Graves’ disease with repetitive depression and dysphagia episodes: A case report

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Abstract
Graves’ disease is a recurrent syndrome often accompanied by depression. I report a rare case in which dysphagia and bulbar myopathy indicated a relapse of Graves’ disease, accompanied by recurrent depression.

KEYWORDS
depression, dysphagia, Graves’ disease, myopathy, videoendoscopy

1 | INTRODUCTION
Graves’ disease is a recurrent disease that presents with various systemic symptoms. The disease is often accompanied not only by well-known systemic endocrine symptoms, such as tachycardia and/or tremors, but also by muscular, neuronal, and mental disorders, including depression.1,2 Given the frequency of mental disorders caused by Graves’ disease, psychiatrists often measure their patients’ thyroid hormones; nevertheless, it is rare that dysphagia, a presentation of muscular/neuronal symptoms, is the only clue to hyperthyroidism and depression. In this study, I present a rare case of repetitive depression caused by a relapse of Graves’ disease, which was found and evidenced by tests for dysphagia.

2 | CASE HISTORY/EXAMINATION
An 83-year-old woman was diagnosed with Graves’ disease and reported remission in her youth. In her senile state, she had two episodes of depression that required hospitalization. One episode occurred 6 years ago, and another occurred 1 year ago. Electroconvulsive therapy was applied during the second hospitalization, but medications were not changed. Escitalopram and brotizolam have been administered to date. Nevertheless, during rehospitalization, the patient repeatedly and frequently experienced suffocation triggered by steamed rice, noodles, and spaghetti. A general practitioner (GP) could not identify any disorders; hence, the patient was referred to my clinic.

Written informed consent to publish this case report was obtained from the patient at the first visit, and approval was granted by the institutional review board (No. 02–01) in Institute of Head and Neck Immunology and Nutrition.

Figure 1 shows the video endoscopic findings on the patient’s first visit. Video endoscopy via the nasal cavity using fine flexible endoscopic fiber was used to evaluate every swallowing stage during deglutition of colored water and jelly and to check the sensation of the laryngeal mucosa. Excessive saliva was observed in the hypopharynx. Video endoscopy revealed airway penetration, and the patient choked on jelly (Figure 1A). She also choked on water that...
reached the subglottic space (Figure 1B). The Penetration–Aspiration Scale (PAS) score was 4. Endoscopic “white-out” during larynx elevation was significantly shortened and weakened. Reflux to the nasopharynx was found (Figure 1C), suggesting velopharyngeal incompetence. Fasciculation of the tongue and myoclonus of the pharyngeal wall were also observed. These signs and symptoms, which resembled bulbar myopathy, could also be caused by her psychotropic medications (escitalopram and brotizolam). However, the psychiatrist in charge denied this possibility.

Although the goiter was not palpable, increased blood flow in the thyroid was observed on ultrasound (Figure 2). A relatively large adenomatous goiter was found in the patient’s right lobe, but it was not considered a functional tumor in terms of its blood flow. Rapid examination showed that the thyroid-stimulating hormone (TSH) level was under the detection limit (<0.06 IU/ml), whereas the free thyroxine (free T4) level was elevated (1.82 ng/dl). The free triiodothyronine (T3) level was also elevated (5.51 pg/ml). Thyrotoxicosis was suspected; hence, autoantibodies to the thyroid components were measured. Levels of anti-TSH (6.9 IU/L), anti-thyroglobulin (976 IU/ml), and anti-thyroid peroxidase (581 IU/ml) antibodies were notably elevated. Thyroglobulin was under the detection limit (<0.04 ng/ml). Thus, the recurrence of Graves’ disease was strongly suspected, and she began receiving 10 mg/d of thiamazole.

After 3 months of thiamazole administration, the patient’s TSH levels increased (0.09 IU/ml) and the free T4 levels normalized (1.38 ng/dl). She no longer complained about suffocation. Water swallowing on video endoscopy

FIGURE 1 Video endoscopy on the patient’s first visit. (A) Video endoscopy of jelly swallowing on the patient’s first visit. The jelly was about to be aspirated into the glottis. (B) Video endoscopy of colored water (not thickened) swallowing at first presentation. The water completely penetrated the glottis, eliciting a severe and repeated cough reflex. (C) Nasopharyngeal reflux of the colored water at the first visit
SAKAKURA showed little residue in the piriformis sinus, but there was no water in the larynx (Figure 3A). The jelly was almost completely cleared without any aspiration, with a slight residue in the piriformis sinus (Figure 3B). The PAS score improved from 4 to 1. The patient was placed on a 5 mg/d thiamazole therapy and referred to a family medicine regional clinic for follow-up visits 3 months ago, as she had no further complaints about swallowing at that time.

DISCUSSION

Apathetic hyperthyroidism is thyrotoxicosis in the senile state, which is widely accompanied by depression. Although thyrotoxicosis in youth and adolescence is rather manifested as mania, thyrotoxicosis tends to be associated with depression in the senile state.1,2 In our case, the psychiatrists had not measured the levels of thyroid...
hormones, and unfortunately, they diagnosed common senile depression.

In 1966, Ramsey et al. reported that thyrotoxicosis sometimes causes myopathy. Myopathy is believed to be elicited via the upregulation of Na\(^+\) channels and Na\(^+\)/K\(^+\) pump by thyroid hormone. Dysphagia has also been reported in patients with thyrotoxicosis. Two mechanisms of dysphagia in thyrotoxicosis have been considered: oropharyngeal/esophageal mobility and bulbar myopathy. To date, the pathogenesis of bulbar muscle weakness in thyrotoxicosis remains unknown as with other forms of myopathy; however, a myopathic or neurogenic pattern was identified in electromyography. Since there have been few reports of bulbar myopathy accompanying thyrotoxicosis, the pathology is still within speculation. Here, the patient showed dysphagia, fasciculation of the tongue, and myoclonus of the pharyngeal wall. Furthermore, velopharyngeal incompetence was detected. These signs and symptoms implied the existence of bulbar paralysis. Additionally, the symptoms in our patient were quite different from those in periodic hypokalemic paralysis frequently seen in Asian males with Graves’ disease.

This is a rare case in which dysphagia was a major symptom of hyperthyroidism accompanied by recurrent depression. Hence, this complicated condition was found and evidenced by dysphagia episodes and video endoscopy. Moreover, this rare case required a multidisciplinary approach, including psychiatrists and GPs. Indeed, multidisciplinary cooperation is essential to care for and treat dysphagia.

4 | CONCLUSION

In this study, an unusual case was presented with repetitive depression and recurrent Graves’ disease, evidenced by dysphagia episodes. Video endoscopy for dysphagia can be a possible tool for identifying hidden endocrinial and mental diseases. Clinicians should be aware of any medical and psychological symptoms in patients with a history of Graves’ and thyroid disease.

AUTHOR CONTRIBUTIONS
KS collected data and wrote the manuscript.

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CONFLICTS OF INTEREST
The author has no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT
The data sets supporting the conclusions of this article are included within the article.

ETHICAL APPROVAL
Approval was obtained from the institutional review board (No. 02–01) in Institute of Head and Neck Immunology and Nutrition.

CONSENT
Written informed consent was obtained from the patient to publish this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal. The author also agrees to publish in this journal.

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