

CASE REPORT

# Bilateral Vocal Cord Palsy as the Only Symptom of Thymoma Associated-Myasthenia Gravis

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## ABSTRACT

*Bilateral vocal cord paresis is a rare phenomenon caused by different underlying etiologies. Myasthenia gravis is included in this long differential diagnosis. Usually, it happens as part of a serious clinical state of a patient, that also suffers from generalized muscle weakness, diplopia, dysphagia, eyelid ptosis. In our case, a 58-year-old woman presented in the emergency room with solely dyspnea, caused by bilateral cord palsy, and that appeared to be the only symptom of thymoma associated-myasthenia gravis. Another interesting fact about this case is the quick recovery and no need for tracheostomy and intubation in the first hours of her admission to hospital.*

**Keywords:** myasthenia gravis, thymoma, bilateral vocal fold paralysis.

## INTRODUCTION

**M**yasthenia gravis (MG) is an autoimmune disorder characterized by fluctuating weakness of skeletal muscles, which can be generalized or localized. It is usually more proximal than distal and nearly always affects eye muscles, causing diplopia and ptosis (1). The disease has an annual incidence of 8 to

10 cases per one million persons and is the most common disorder affecting the neuromuscular junction (2). The diagnosis is confirmed by the combination of clinical symptoms and signs and a positive test for specific autoantibodies. Antibodies against acetylcholine receptors (AChR), muscle-specific kinase (MuSK), and lipoprotein receptor-related protein 4 (LRP4) are specific and sensitive for the MG detection. There are

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Article received on the the 17<sup>th</sup> of January 2022 and accepted for publication on the 22<sup>nd</sup> of March 2022

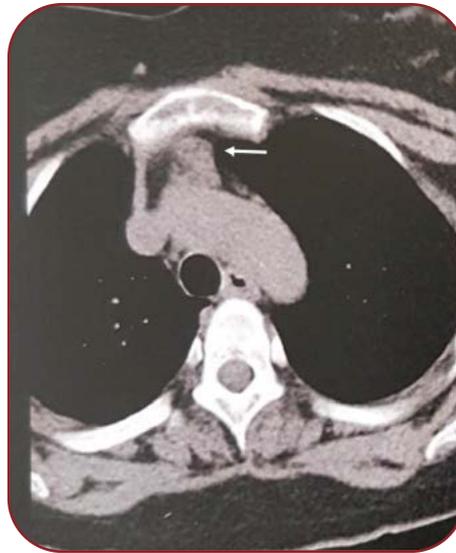
antibody-negative cases, where specific neurophysiological tests are needed and sometimes response to treatment to verify the correct diagnosis (1).

Myasthenia gravis with positive anti-AchR is associated with pathological abnormalities of the thymus gland in nearly 85% of patients (3). Thymoma is found in about 10–15% of MG patients. Thymoma-associated MG is considered to be a more severe and difficult to manage disease compared with non-thymomatous MG. Apart from surgical excision, prolonged immunosuppressive treatment may also be required (4).

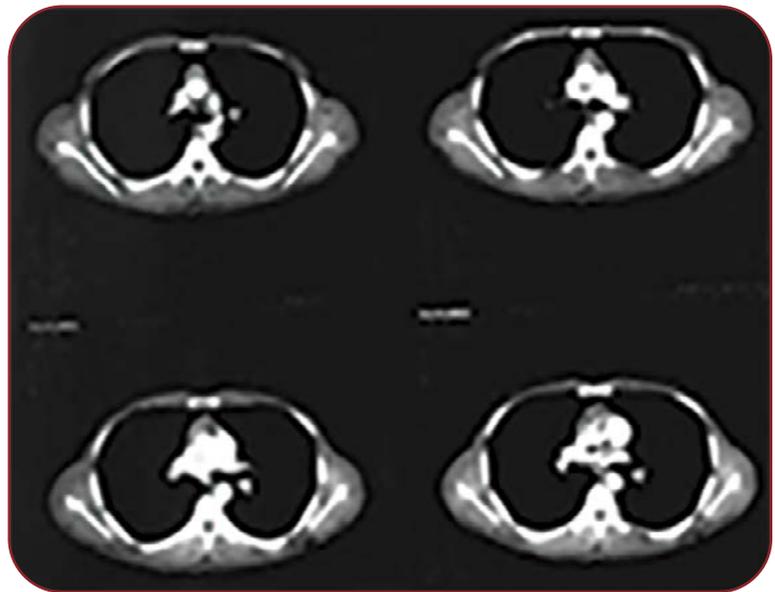
Significant weakness of the oropharyngeal and respiratory muscles is the most severe manifestation of the disease. Here, we report a rare case of MG with anti-AchR, associated with thymoma, presenting exclusively with vocal cord paralysis. □

**CASE REPORT**

A 58-year-old female patient with a history of arterial hypertension entered the hospital emergency room with inhaling wheezing and acute shortness of breath. The patient had been receiving antibiotic treatment for upper respiratory infection (azithromycin 500 mg daily) for the last two days. Clinical and endoscopic examination revealed a bilateral vocal cord paralysis, in a median position (Figure 1). In the emergency room she was set under monitoring, IV steroids were administered, and she was respiratory supported with oxygen in order to avoid intubation or tracheotomy. The patient underwent a thorough examination of antibodies concerning autoimmune disorders – specifically, antinuclear antibodies, c-Anca, p-Anca, c3, c4, anti-TPO, anti-TG and rheumatoid factor (RF) with no pathological alteration. Her symptoms were significantly improved after treatment with intravenous prednisolone 1 mg/kg/day within the first six hours. Under strobovideolaryngoscopy observation, improvement of laryngeal function was demonstrated, revealing a paralysis of the right vocal fold and progressive improvement in the movement of the other in the next six hours. Twenty-four hours following steroid treatment, vocal cords movement was restored. Thyroid gland was normal and no external compression at the area of laryngeal nerves was noticed. Laboratory studies, including blood test, rheumatological markers, thyroid hormones, and cancer markers, were obtained, showing no pathological alteration (Table 1). The external causes of compression of laryngeal nerves was ruled out by CT scan of cervix. Diagnostic investigation by brain, skull-base and thorax CT revealed a mediastinal mass of approximately 5 cm in the anatomical position of thymus. According to the characteristics of the lesion and the patient’s age, thymoma was the most probable diagnosis (Figure 2).



**FIGURE 1.** Laryngeal endoscopy picture of the patient’s presentation at the emergency department demonstrating bilateral paralysis of vocal cords



**FIGURE 2.** CT scan revealing a 5 cm mass in the area of the thymus gland

**TABLE 1.** Demographic, clinical, and laboratory test characteristics

Age (years): 58
Gender: female (F)
Age at onset of MG: 58 years
Anti-AchR-ab nmol/L: 4.59
Chest Rx: n/a
Chest CT: 5 cm mass
Brain MRI: n/a
Liver function tests: n/a
Thyroid function tests: n/a TSH: 1.9329 $\mu$ IU/mL (0.35.000-4.9400), T4: 8.63 $\mu$ g/dL (4.87-11-72), anti TPO: 0.90 IU/mL (<5.61), anti TG: 1.52 IU/mL (<4.11)
Rheumatoid factor: n/a
c-Anca, p-Anca: n/a

n/a= no pathological alteration; MG=myasthenia gravis

Due to the clinical course of our patient, a diagnosis of myasthenia gravis was suspected, although she did not have any history of muscle weakness, fatigue, diplopia, or fluctuation of any of the above symptoms. Antibodies testing against acetylcholine receptor, anti-titin, anti-Musk, and anti-ryanodine were performed, confirming the diagnosis of myasthenia gravis related to thymoma, after finding a positive result of anti-AchR, 4.59 nmol/L (reference value up to 0.8 nmol/L) (Table 1). The patient gradually stabilized, having ceased the use of macrolide antibiotics and she continued with the initial dose of prednisone (60 mg/day) for months, followed by slow tapers.

Meanwhile, a surgical excision of the mass was scheduled. A month later, surgery was performed and pathology analysis confirmed the malignant thymoma diagnosis. The patient continued the use of low dose corticosteroids for six more months. Corticotherapy withdrawal was decided after her clinical improvement. Today, a year and a half after surgery, she remains free of symptoms without any systematic treatment. □

### DISCUSSION

**O**ur patient had acute dyspnea, while she was taking a macrolide for an upper respiratory infection for few days prior to hospitalization. Administration of antibiotics (macrolide), a contraindicated drug for patients with myasthenia, seemed to accelerate the emergence of the

disease (5). The patient did not mention any other presenting symptoms. She did not have any muscle weakness, fatigue, diplopia or dysphagia. Her presenting and unique symptom was the airway obstruction due to bilateral vocal cord paralysis. In a recently published review, bilateral vocal cord palsy was found to be associated with MG in 11 cases in the bibliography from 1980 to 2020 (6), and in most of them it was the presenting symptom of the disease.

An interesting fact in our case is the remission of wheezing-dyspnea with intravenous corticosteroid treatment, without any need for tracheotomy or ventilation, as is usually the case in bilateral cord palsy (7).

Furthermore, antibodies to the surface membrane enzyme muscle-specific tyrosine kinase (MuSK) are usually found in cases with bulbar symptoms and respiratory insufficiency (8). Nevertheless, patients with thymoma associated MG usually have anti-AchR (4). The above facts, along with the presenting and sole symptom of bilateral vocal cord palsy in our patient highlight the particularity of our case.

As long as thymoma is concerned, about 10-15% of patients with MG are affected by it and appropriate treatment steps are necessary to be planned after such a finding. In early stages, complete surgical resection is the cornerstone of treatment. Nowadays, minimally invasive approaches can be safely performed and are therefore preferred in myasthenic patients, because they avoid complications of an open approach (9). In cases of advanced stage thymoma in myasthenic patients, a multidisciplinary approach is needed, because surrounding structures, organs and vessels may be infiltrated (10).

We suggest that myasthenia gravis should be considered in cases of vocal cord paralysis of unknown etiology, since this presentation may be the initial and only symptom of the disease and could be a life-threatening situation if misdiagnosed. □

*Conflicts of interest: none declared*

*Financial support: none declared*

*Ethics statement: The patient provided a written informed consent to participate in this study as well as for the publication of any potentially identifiable images or data included in this article.*



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