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Case Report

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Preoperative spontaneous regression of type B2 thymoma in a patient with myasthenia gravis

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ABSTRACT

Thymoma is the most common tumor of the anterior mediastinum. Spontaneous regression of thymoma is extremely rare. A 34-year-old female patient without any known disease, admitted by a myasthenic crisis, had a mass of 76 x 53 x 88 mm on thorax computed tomography (CT). The patient received intravenous immunoglobulin (IVIg) treatment for 5 days, pyridostigmine 60 mg/8 hours and prednisone 30 mg/day for the treatment of myasthenic crisis. Thorax CT on the 18th day showed that the mediastinal mass regressed to 63 x 30 x 63 mm. Histopathological analysis after extended thymectomy revealed the diagnosis of type B2 thymoma.

Keywords: Thymoma, neoplasm regression, spontaneous, myasthenia gravis

INTRODUCTION

Thymoma is the most common neoplasm of the anterior mediastinum originating from the thymic epithelial cell.[1] Although it is usually asymptomatic, it may present with paraneoplastic syndromes. The most common paraneoplastic syndrome is myasthenia gravis (MG) which is observed in 25-40% of patients with thymoma.[2] Although thymoma cases with spontaneous regression are very rare, cases with regression secondary to glucocorticoid therapy have been reported in the literature. In this case report, we present spontaneous regression of a type B2 thymoma during the preoperative preparation period, in a patient admitted to neurology department with myasthenic crisis without any previous diagnose of MG.

CASE

A 34-year-old female patient was admitted to the neurology department with complaints of hoarseness, numbness in the tongue, and ptosis that started a month ago. He had no known chronic diseases and had a 1-pack/year smoking history. During the diagnostic investigation, the patient developed respiratory arrest and was intubated. Upon the arrival anti-acetylcholine receptor antibody level (anti-AChR) was >15 nmol/L, a MG was diagnosed and myasthenic crisis treatment was planned. Laboratory values and tumor markers were within normal ranges (Hb 12.3 g/dl, Leukocyte 9800/uL, CRP 1.66 mg/L, LDH 260 U/L, β- HCG <5 mIU/mL). Posteroanterior chest X-ray revealed mediastinal enlargement. Thorax CT revealed a 76 x 53 x 88 mm (he mass was accepted as an ellipse in shape and the volume was calculated according to the formula $V=(4/3)\pi r^1 r^2 r^3$, total tumour volume was 182.1 cm^3) lesion in the anterior mediastinum with prevascular heterogeneity (**Figure 1A**). For the treatment of the crisis, she received pyridostigmine 60 mg/8 hours, prednisone 30 mg/day and 5 days of intravenous immunoglobulin (IVIg). On the 7th day of mechanical ventilation, symptoms have improved and the patient was extubated. Excision of the anterior mediastinal mass was planned and contrast-enhanced thorax CT taken 18 days after the first tomography revelaed that the lesion in the anterior mediastinum regressed to 63 x 30 x 63 mm (total tumour volume 60.38 cm^3, 66% reduction in diagnostic volume) (**Figure 1B**).

Extended thymectomy with left cervicotomy + partial sternotomy and right paratracheal lymph node sampling was performed on 25th day of the first admission. Histopathological examination revealed a lesion 75 x 20 x 63 mm (total tumour volume 48.05 cm^3,73% reduction in diagnostic volume) in size containing cystic components with hemorrhage, consistent with WHO type B2 thymoma invading the thymic capsule (modified masaoka classification, stage IIA) (**Figure 2**). Only reactive changes were observed in the lymph node sample. The patients' postoperative period was uneventful and she was discharged on the 7th day. She received 28 sessions of adjuvant radiotherapy. No recurrence was observed during the postoperative 18-month follow-up.

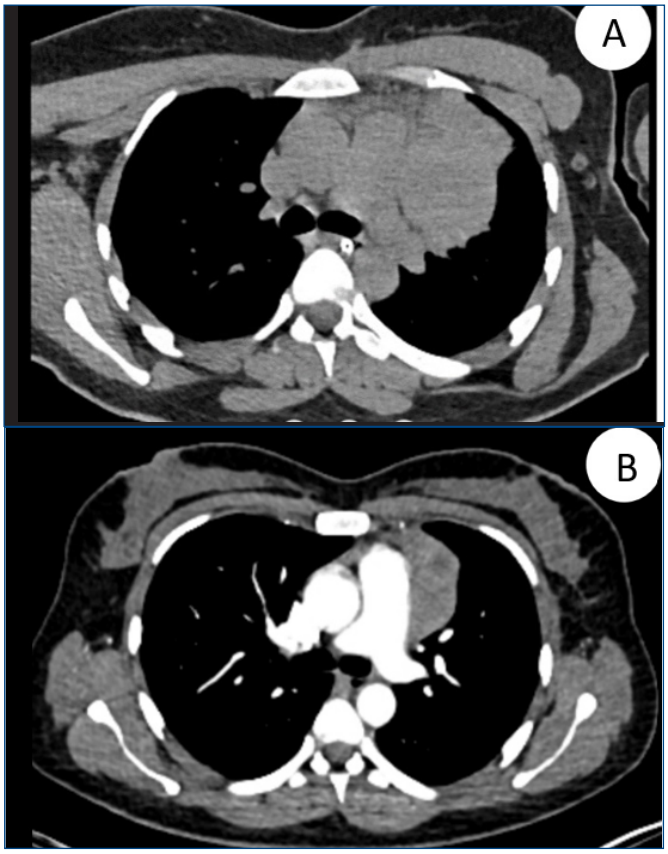

Figure 1. (A): 76 x 53 x 88 mm soft tissue lesion in the prevascular region in the anterior mediastinum on thorax CT (B): 63 x 30 x 63 mm soft tissue lesion showing regression on thorax CT taken 18 days later

DISCUSSION

While thymoma is detected in 10-15% of MG patients, MG is seen in 25-40% of cases with thymoma. In most cases, the symptoms usually worsen rapidly and respiratory distress may develop. A randomized controlled trial by Wolfe Gl et al.[3] showed that thymectomy was beneficial in anti-AChR-positive patients. In the presence of severe symptoms such as bulbar involvement; bridging therapy with IVIg or plasmapheresis is recommended to reduce the need for intensive care, artificial respiration time, and the risk of myasthenic crisis.[4] Our patient was also hospitalized in the intensive care unit due to respiratory distress, and preoperative bridging treatment was applied.

In the literature, thymoma cases with regression have been published in two main frameworks spontaneous or secondary to glucocorticoid treatment. Glucocorticoid receptors have been found in the cytosol of thymoma cells and it has been suggested that secondary regression in glucocorticoid is due to apoptosis of the lymphocytic component. Kobayashi et al.[5] evaluated 17 patients who received two preoperative cycles of glucocorticoid therapy (IV 1 g methylprednisolone for three days). They compared thorax CT before and one week after the treatment and reported that partial response (decrease in the measurable diameters of the lesion>50% reduction) was seen in 47.1% of patients, type B1 thymoma was the subtype that showed the biggest response, and that there was no difference in response rate in patients with and without a history of MG. Barrat et al.[6] reported that an incidentally detected type B1 thymoma case without MG completely regressed due to long-term dexamethasone use.[7] In our case, the patient also used 30 mg/day prednisone in the preoperative period, but two points make our case unique; i. the histopathologic type was a type B2 thymoma, ii. the steroid dose used was lower than the reported cases, and although pulsed steroids were not given, regression was seen within 18 days.

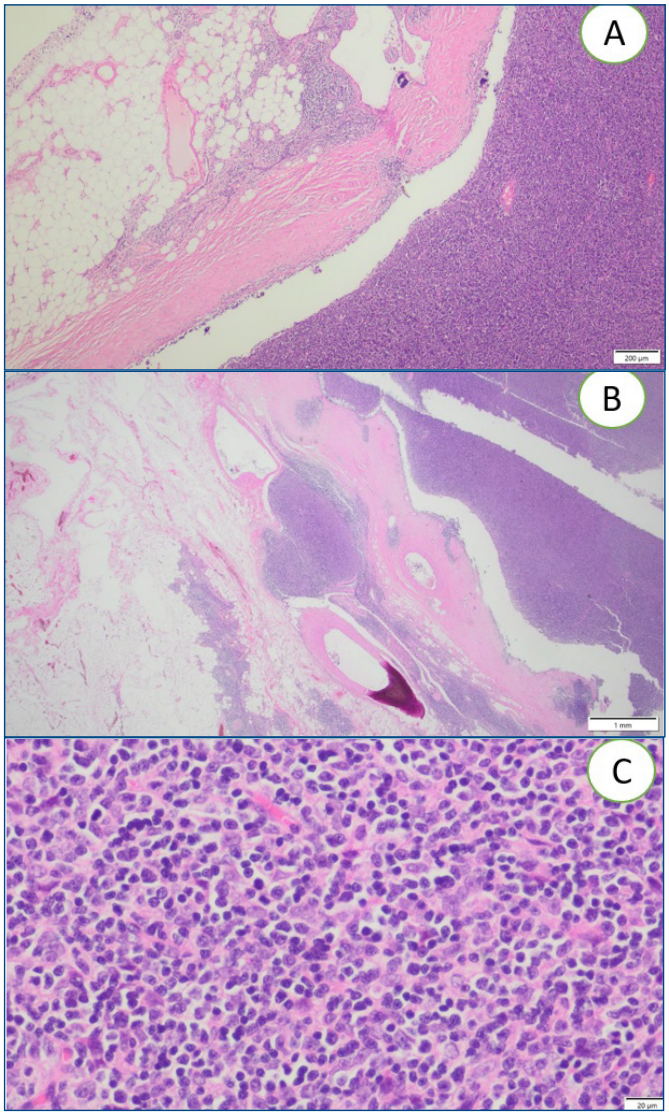

Figure 2. (A): A well-circumscribed neoplastic growth is observed, surrounded by a thick fibrous capsule (hematoxylin and eosin stain; original magnification x1.25) (B): It is observed that the tumor is mostly confined within the capsule, occasionally exceeding the thymic capsule and infiltrating the surrounding soft tissues (hematoxylin and eosin stain; original magnification x4) (C): In the cellular proliferation constituting the tumor, thymocytes with narrow cytoplasm and small hyperchromatic nuclei and epithelioid cells with large vesicular nuclei and large clear-eosinophilic cytoplasm forming groups of 2-3 scattered among them are observed. (hematoxylin and eosin stain; original magnification x40)

There are different reports on the effect of IVIg use on thymoma remission. Murie-Fernández et al.[8] reported total remission secondary to the use of IVIg in their patients with metastatic thymoma with symptoms of myasthenia gravis. In this case, the patient who underwent surgery for thymoma, received chemotherapy and radiotherapy, presented with myasthenic crisis 8 years after the diagnosis, and a pleural metastatic implant and two nodules in the lung were noticed. The patient received two cycles of IVIg (2 mg/kg) for five days, total remission of the lesions was reported one year later. Phillips et al.[9] reported the results of ketogenic diet, prednisone, IVIg, octreotide, and azathioprine treatment in a patient with WHO type AB (Masaoka stage IVA) thymoma with a diagnosis of myasthenia gravis and pleural metastases.They evaluated the effect of IVIg use on regression, but they found an increase in the size of the lesion during the IVIg treatment given every 3 weeks.

Therefore, there are reports in the literature that the use of IVIG can affect lesion size in both directions. In our case, IVIg treatment given before surgery may have contributed to the regression.

Histopathological examination of thymoma cases with spontaneous regression, showed that resected specimen includes necrotic features. In our case there was no necrosis in pathological specimen. Patients generally present with chest pain and/or low-grade fever at the time of admission.[10] Although the mechanism of spontaneous regression is not clearly explained, it is thought that an inflammatory reaction disrupts vascular nutrition and causes necrosis, and the symptoms seen in these patients are secondary to the necrosis.[11] While these symptoms were not present in our case, medical treatment given in the intensive care unit may have disguised these symptoms.

CONCLUSION

We have reported the case of invasive thymoma that spontaneously regressed in a MG patient. Regression of the lesion may occur in thymoma patients who received preoperative steroids and/or IVIG treatment. This should not be ignored when planning surgery.

ETHICAL DECLARATIONS

Informed Consent: All patients signed and free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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