A case report of post-thymectomy myasthenia gravis with residual thymoma

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Summary

A forty-nine-year-old female patient, complaining of swallowing difficulties and general fatigue, was admitted to the first hospital of Nippon Medical School.

At the age of 32, she was operated on for the removal of a well encapsulated non-invasive thymoma. Since then, she had been well till the age of 46, when chest X-ray films showed a recurrent thymoma which was excised together with the complete thymic tissues.

One year later, she developed myasthenia gravis (MG) with a ptotic right upper eyelid and general fatigue. Subsequently, she was placed on medication. After 21 months, however, she died of myasthenic crisis in spite of vigorous respiratory and nutritional support. The autopsy revealed a small residual thymoma on the left lung, and systemic atrophy of the skeletal muscles.

In this paper, the mechanism of post-thymectomy MG and the recurrence of non-invasive thymoma are discussed.

Key words: thymoma, recurrence, post-thymectomy myasthenia gravis

Introduction

Myasthenia gravis (MG) is often associated with thymoma¹,², and they are frequently diagnosed together. But, in some cases, MG develops after the extirpation³-⁸ of thymoma or thymus.

The authors have previously reported a case of post-thymectomy MG⁹. In this paper, we describe the history of that patient who died of myasthenic crisis. The autopsy disclosed a thymoma nodule. Furthermore, we will also discuss the significance of recurrent thymoma and post-thymectomy MG with reference to the literature.

Case report

1. 49 y.o. female

(1) History of present illness

This myasthenic female patient had been treated successfully with ambenonium chloride since post-thymectomy MG developed at the age of 47. But, 21 months after the initiation of the treatment, she had difficulty in swallowing and severe general fatigue. She was, then, admitted to the first hospital of Nippon Medical School for further evaluation and treatment.

(2) Past history

At the age of 32, the asymptomatic patient was diagnosed as having an anterior mediastinal
Fig. 1 A regular check-up of a 32-year-old asymptomatic female by chest X-ray (left) revealed a round mediastinal mass which is more clearly visualized by the lateral tomography (right).

Fig. 2 After an uneventful period of 14 years, another round mass in the same site of the previous extirpation was disclosed by a plain chest X-ray film and the lateral tomography (right).

Fig. 3 The patient complained of a ptotic right upper eyelid (left). Intravenous injection of edrophonium (Tensilon) was effective in fully opening the eye immediately (right).

Fig. 4 The autopsy revealed a tiny nodule (4 × 4 × 5 mm) of the thymoma on the pleura of the left lower lobe. The nodule has a very thin or scarce capsule which is partially interrupted. (H.E. stain, 4X)

Fig. 5 Histology of the nodule from the autopsy shows a lymphocytic type of thymoma. (H.E. stain, 600X)
mass by a chest X-ray study (Fig. 1). She underwent surgery for the removal of a well-encapsulated tumor, weighing 73 gr. It was histologically diagnosed as non-invasive thymoma without malignant findings.

She had spent an uneventful course of 14 years postoperatively. But a chest X-ray (Fig. 2) showed a round mass in the previous operative site of the mediastinum. The mass with all the thymic and fatty tissues were removed. The extirpated mass, weighing 12 gr, was histologically the same as the previously diagnosed thymoma without capsule invasions. The accompanying thymic tissue showed Hassall's bodies and a moderate amount of lymphatic follicles.

One year after the second surgery for the recurrent thymoma, she started to complain of a ptotic right upper eyelid and general fatigue. She was then examined by chest X-ray, Tensilon test and electromyography (EMG). The diagnosis of MG was confirmed by a positive test result (Fig. 3), waning and waxing in EMG, elevated anti-DNA antibody, and decreased serum complement value. However, chest X-ray films at this stage disclosed no mass in the mediastinum.

(3) Hospital course

At the beginning of the hospitalization period, the patient had respiratory difficulties in addition to the aforementioned symptoms and was placed on tube feeding and a ventilator. There was a temporary improvement for six months, but she eventually died of myathenic crisis. A post-mortem examination revealed a round mass (Fig. 4), 5 mm in diameter, which was anchored on the surface of the left lower pulmonary lobe and was histologically diagnosed as thymoma (Fig. 5). The mass was invested with a very thin and incomplete fibrous capsule. Moreover, the skeletal muscles were atrophic with eosino- and lymphocytic infiltrations. No other tumor or dissemination was found anywhere else in the body.

Discussion

This patient experienced both a recurrence of non-invasive thymoma and post-thymectomy MG. The course of the recurrence is not fully clarified, but the tumor which was found in the autopsy was an implantation of the previously excised thymoma cells rather than another primary lesion in spite of the fact that the primary thymoma was well encapsulated without any evidence of invasion into or beyond the capsule. Furthermore, the thymic tissue removed with the recurrent thymoma did not contain any tumor tissue at all histologically.

Post-thymectomy MG was first reported by Ferstand in 1951. Akimaru, one of the present authors, has reviewed 42 post-thymectomy MG cases including this one. Among them, 27 cases had undergone a previous total thymectomy. Nine cases died of respiratory failure and the autopsies on two cases disclosed residual thymic tissues. Remissions were noted in 5 cases. Another remission was obtained by the removal of the residual thymus. But, in this case we were unable to locate the tumor which was found in the autopsy. Following this case, similar ones have been reported sporadically, although a recent group study of 18 post-thymectomy MG cases out of 394 thymomas without MG was reported. In the study, they investigated the pathogenesis of post-thymectomy MG development and concluded that the earlier MG onset within 6 months noted in 7 cases stood for subclinical MG at the time of tumor extirpation and that the later than 4 year onset in 5 cases could have been induced by recurrent thymomas as in our case. The pathogenesis of post-thymectomy MG in the rest of the cases could not be clarified. If the MG
patients with thymoma had chest X-ray studies before the onset of MG, they might have undergone thymectomy for abnormal X-ray findings and been put into the category of post-thymectomy MG. Not a few post-thymectomy MG patients developed MG years after the surgery. Therefore, it is difficult to conclude that thymectomies or thymomectomies are a direct cause of MG onset, because a hyperplastic thymus is supposed to play an important role in imbalancing the immunological equilibrium, and thymectomy is an effective treatment for MG. On the other hand, thymoma does not always seem to suppress MG onset, since recurrence of thymoma aggravates MG symptoms and removal of the tumor alleviates the symptoms. Accordingly, we would rather assume that an unidentified factor (agent) might stimulate the thymus first to develop a thymoma or thymic hyperplasia, and additionally might induce an immunological response to produce anti-Ach receptor antibody not only through the thymus but also through the other lymphoid tissues. The time lag between the entry of the common agent and the onset of MG may depend on an immunological response to produce an adequate antibody in individual cases.

References


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