Abstract
We herein report the cases of 3 patients with thymic epithelial tumours, including two thymomas and a carcinoma, where the tumours spontaneously regressed in size. The patients were all female ranging in age from 32 to 43 years. During 1 or 2 months without any treatment, the tumours regressed by 25–59% in size. The pleural effusion observed in 2 patients also disappeared during the same period. Pathological examinations revealed areas of necrosis or cystic changes within the two thymomas. Among the patients with thymic epithelial tumours, the existence of this rare disease entity must be recognized.

Keywords: Thymic epithelial tumour ∙ Thymoma ∙ Thymic carcinoma

INTRODUCTION
Spontaneous regression (SR) of a thymic epithelial tumour is a rare phenomenon. No previous case report has described an advanced thymoma or thymic carcinoma showing SR. We, herein, report the cases of 3 patients with thymic epithelial tumours, including two thymomas and a carcinoma, where the tumours spontaneously regressed in size.

CASE 1
A 43-year old female was admitted to a nearby hospital due to the sudden onset of right shoulder and back pain. Chest computed tomography (CT) showed an anterior mediastinal mass of 3.4 × 3.4 × 2.7 cm in size with right pleural effusion. She was scheduled to undergo tumour extirpation or thymectomy at our hospital. A chest CT examination carried out just before the surgery revealed tumour regression to 1.4 × 1.2 × 0.8 cm and the disappearance of the pleural effusion after 1.5 months from the first presentation (Fig. 1A). Since frozen sections of the tumour were diagnosed as a thymoma during surgery, total thymectomy was carried out through a median sternotomy. The macroscopic findings showed a necrotic area in the central part of the resected tumour. The final pathological diagnosis was a thymoma, type B2 (World Health Organization classification, Fig. 2), which had minimally invaded the capsule (Masaoka stage II).

CASE 2
A 32-year old female was admitted to a nearby hospital due to fever and anterior chest pain. Contrast-enhanced chest CT showed a huge mediastinal mass of 10.0 × 9.5 × 7.9 cm in size, which was heterogeneously enhanced, and separate nodules in the left thoracic cavity with pleural effusion. The tumour was diagnosed as a thymoma, type B2, which had pleural dissemination (Stage Iva). The patient was scheduled to undergo induction chemotherapy with cisplatin, doxorubicin and methylprednisolone for four cycles, and was admitted to our hospital. After 1 month from the first radiological evaluation, a contrast-enhanced-CT just before the start of chemotherapy revealed that the tumour had regressed to 7.3 × 6.9 × 4.9 cm in size, and the pleural effusion had disappeared without any treatment, although the pleural dissemination remained (Fig. 1B). After four cycles of chemotherapy, the patient underwent total thymectomy and left extrapleural pneumonectomy. The final pathological diagnosis was also a thymoma, type B2. The macro and microscopic findings showed that the tumour included some cystic and haemorrhagic changes and areas of necrosis.

CASE 3
A 38-year old female consulted a nearby hospital due to the sudden onset of anterior chest pain. Chest CT showed an anterior mediastinal mass of 5.9 × 4.8 × 3.9 cm in size, which was heterogeneously enhanced. Since a mature cystic teratoma or a thymoma was highly suspected, she was scheduled to undergo surgical resection for the diagnosis of the tumour with curative intent. As a preoperative evaluation, contrast-enhanced-CT was carried out just after a month from the first presentation. The tumour was found to have spontaneously regressed to 3.6 × 3.5 × 2.0 cm without any treatment (Fig. 1C). A total thymectomy was performed through a median sternotomy. The macroscopic findings showed a small cystic area in part of the tumour. The final
Figure 1: CT findings of the 3 patients. (A) CT images from Case 1. An anterior mediastinal mass of 3.4 × 3.4 × 2.7 cm at the first presentation (left) regressed to 1.4 × 1.2 × 0.8 cm after 1.5 months (right). The slight pleural effusion disappeared during the same period. (B) CT images from Case 2. A huge mediastinal mass of 10.0 × 9.5 × 7.9 cm, which was heterogeneously enhanced (left), regressed to 7.3 × 6.9 × 4.9 cm during a 1-month period, and the pleural effusion also disappeared (right). (C) CT images from Case 3. An anterior mediastinal mass of 5.9 × 4.8 × 3.9 cm noted at the first presentation (left) regressed to 3.6 × 3.5 × 2.0 cm without any treatment during the 1-month period between examinations (right).

Figure 2: Pathological findings of the resected tumour from Case 1. (A) The tumour contained a lobular proliferation of large polygonal cells and abundant lymphocytes, which was diagnosed as type B2 thymoma (haematoxylin and eosin; ×200). (B) A large necrotic area was found in the centre of the tumour (haematoxylin and eosin; ×40).
pathological diagnosis was a squamous cell carcinoma that was minimally invading the surrounding thymus and mediastinal fat tissue (Stage II), and no apparent areas of necrosis or infarction were found in the tumour.

COMMENT

Generally, tumour regression can occur by apoptosis, necrosis or rupture. Some mediastinal tumours, such as teratomas or seminomas, have been reported to show necrosis resulting in SR [1]. However, SR of a thymic epithelial tumour is rare. There have been some reports in the English-language literature and 12 cases reported in Japan of SR of a thymoma [2–4]. To our knowledge, this is the first report of a patient with thymic carcinoma showing SR.

Moran and Suster reported 25 thymomas with cystic and haemorrhagic changes and areas of necrosis and infarction among 600 patients with thymomas [5]. They did not mention whether the thymomas of their cases regressed, although the pathological findings in their cases were similar to those in our patients. They described that most thymomas with such characteristics are encapsulated, and their prognosis is good. In fact, the previously reported patients were almost all classified as Stage I or II. Only 1 patient with a Stage III thymoma was reported in Japan [4]. However, ‘case 2’ in the present report had a Stage IVa disease due to pleural disseminations. Thus, this is thought to be the first report of an advanced thymoma showing SR.

The mechanisms underlying the SR of thymomas are still unclear. All of our cases had some symptoms, such as a fever and/or chest pain, although thymomas are generally asymptomatic. These conditions may be related to the rapid enlargement of the tumour, which could have caused a disorder of the vascular supply and necrosis, with an inflammatory reaction causing pleural effusion. All the present cases might have consulted their hospitals in this phase. Subsequently, the tumour might have regressed spontaneously along with the anti-inflammatory changes. In fact, some non-steroidal anti-inflammatory drugs had previously been administered for Cases 1 and 2 for several days. However, Case 3 had not received any drugs.

Usually at our institute, at least two separate CT examinations are carried out before performing surgery in most cases. Although it is possible to overlook a regression of the tumour when only performing CT once, multiple CT scans carried out at a certain interval do not seem to be required for such cases because the SR did not indicate any clinical significance. As a result, the planned surgical approach and/or procedure, therefore, did not change in our patients due to the SR of their tumours.

We have observed 3 cases showing SR in 109 consecutive patients with thymic epithelial tumours treated in our hospital, which was similar to the report from Moran and Suster [5]. Although this frequency is relatively low, the potential for SR among patients with thymic epithelial tumours should be recognized by clinicians involved in the management of thoracic malignancies.

Conflict of interest: none declared.

REFERENCES


eComment. Spontaneous regression of thymic tumours

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It is with great interest that I have read the article by Fukui et al. [1]. Spontaneous regression of thymic epithelial tumours is rare according to the international bibliography and the three cases presented are really interesting. The regression of thymic epithelial tumours is not well explained but it looks that there is an important role of autoantibodies in such incidents, and in other autoimmune disorders related with thymomas [2]. There are cases reported in the literature related to thymic hyperplasia due to systemic chemotherapy and complete remission after finishing it. The thymus gland seems to be a part of the immunological mechanism not well understood until now [3].

The treatment for thymomas is surgical and, according to the type, radiotherapy or chemotherapy can follow [4]. In selective patients in whom absence of malignancy is proven by computed tomography (CT)-guided biopsy or else, repeated CT scanning can reveal such cases of spontaneous regression of thymic tumours, and lead to radiological and clinical monitoring rather than surgical treatment. High index of suspicion and supervision is mandatory in such cases [5].

Conflict of interest: none declared

References

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