

Microthymoma and microscopic thymomas associated with a thymic cyst without solid component

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Received: 25 May 2017 / Accepted: 31 July 2017 / Published online: 5 August 2017
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Abstract A 75-year-old asymptomatic man presented with an anterior mediastinal cyst without a solid component on computed tomography. Pathologic examination of the specimens obtained by thoracoscopic resection showed a thymic cyst with a 1.6-mm type A microthymoma in the surrounding thymic tissue. In addition, there were multiple hyperplastic nodules smaller than 1 mm histologically corresponded to microscopic thymomas. The patient underwent completion thymectomy through median sternotomy; thereafter, there was no residual thymic neoplasm detected. This was the first case report of a type A microthymoma. Microthymoma or microscopic thymoma could be present concomitantly with a thymic cyst without a solid component.

Keywords Thymoma · Thymic cyst · Microthymoma

Introduction

The latest World Health Organization (WHO) classification of tumors defined microthymoma as a conventional thymoma measuring <1 cm. Microthymoma with features of type AB, B1, and B2 thymoma had been reported thus far [1]. Thymoma is sometimes associated with thymic cyst. If it is large enough to detect by imaging tests, it is detected as solid component around the cystic wall. However, detection of a microthymoma by preoperative imaging is difficult because of its small size. We report a case of WHO type A microthymoma that was pathologically detected in the thymic tissue surrounding a thymic cyst.

Case

A 75-year-old man was referred to our institute because of an abnormal shadow on radiograph. The medical history of the patient was unremarkable. Chest computed tomography (CT) scan revealed a well-circumscribed, hypodense mass with smooth borders in the anterior mediastinum (Fig. 1a). The mediastinal lesion grew in diameter from 2.0 to 3.3 cm during a 2-year follow-up. Magnetic resonance imaging revealed a mass that was hypointense on T1-weighted imaging and hyperintense on T2-weighted imaging, indicating a cystic lesion (Fig. 1b). There was no solid component in the wall of the cyst or in the neighboring thymus. The patient had no symptoms of myasthenia gravis and no associated autoimmune disease. The anti-acetylcholine receptor antibody level was within normal limits.

Thoracoscopic partial resection of the thymus with the mediastinal cyst was performed. Macroscopically, the anterior mediastinal mass in the thymus appeared cystic

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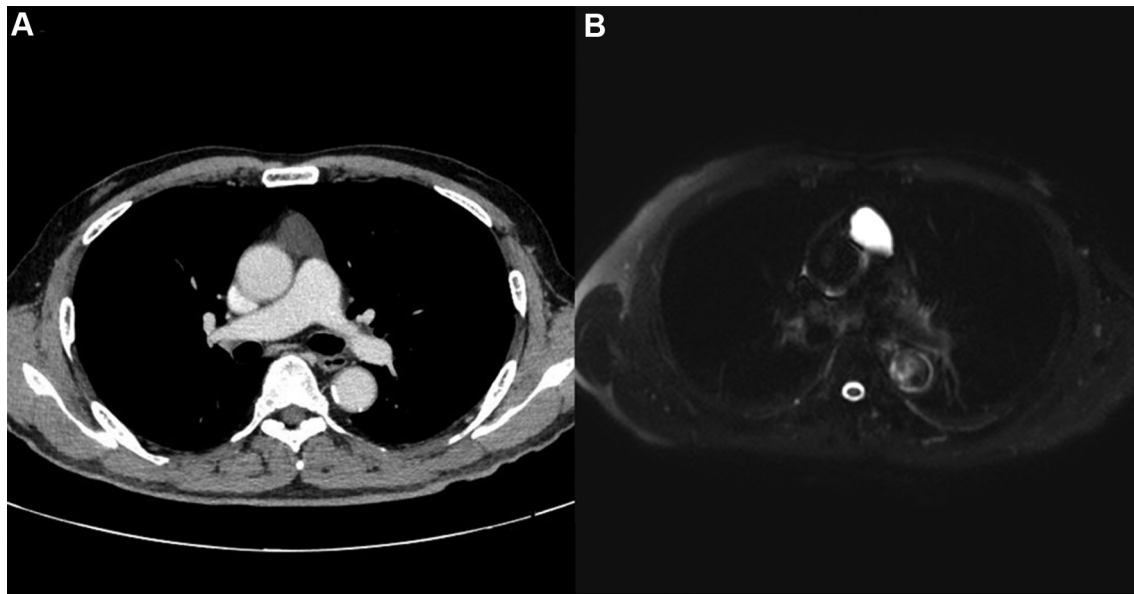


Fig. 1 Diagnostic imaging. **a** Computed tomography shows a 3.3-cm well-circumscribed, hypodense mass with smooth borders in the anterior mediastinum; **b** magnetic resonance T2-weighted imaging shows a hyperintense lesion

and contained serous fluid (Fig. 2). There was no evidence of malignancy in the cystic fluid. Pathologic examination confirmed a unilocular cyst that was backed with flat cells on the wall. Based on these findings, it was finally diagnosed with a congenital thymic cyst. A small unencapsulated lesion that measured 1.6×1.2 mm and that had a high content of spindle epithelial cells with fascicular pattern and few lymphocytes was detected in the surrounding thymus tissue (Fig. 3). These findings indicated microthymoma type A histology based on the WHO classification. The distance between the microthymoma and cystic wall was 0.03 mm (Figs. 2, 3). Moreover, multiple hyperplastic nodules smaller than 1 mm were detected in the thymic epithelium around the cyst (Figs. 2, 3). The diagnosis was microscopic thymoma and 32 lesions were found in the specimen. The patient underwent completion total thymectomy via median sternotomy. Pathologic findings of the remaining thymus revealed no evidence of thymoma. One year after the initial operation, he remains alive without recurrence.

Discussion

Microthymoma, which is extremely rare and considered an early stage of thymoma, was first proposed by Cheuk et al. [2]. Thereafter, several cases have been reported [2–4]. Conversely, microscopic thymoma is defined as an epithelial proliferation of <1 mm in diameter and is usually multifocal [1]; it is called nodular hyperplasia of the thymic epithelium, because there are no data regarding its role

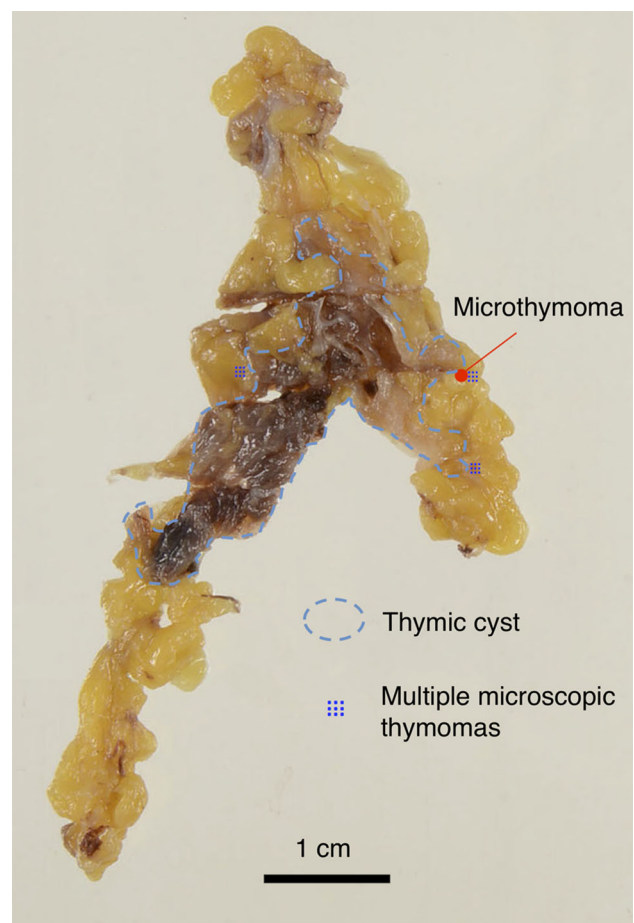


Fig. 2 Macroscopic findings showing the relations of the cyst and multiple lesions of a microthymoma and microscopic thymomas. Microthymoma and multiple microscopic thymomas are in the thymic tissue around the thymic cyst

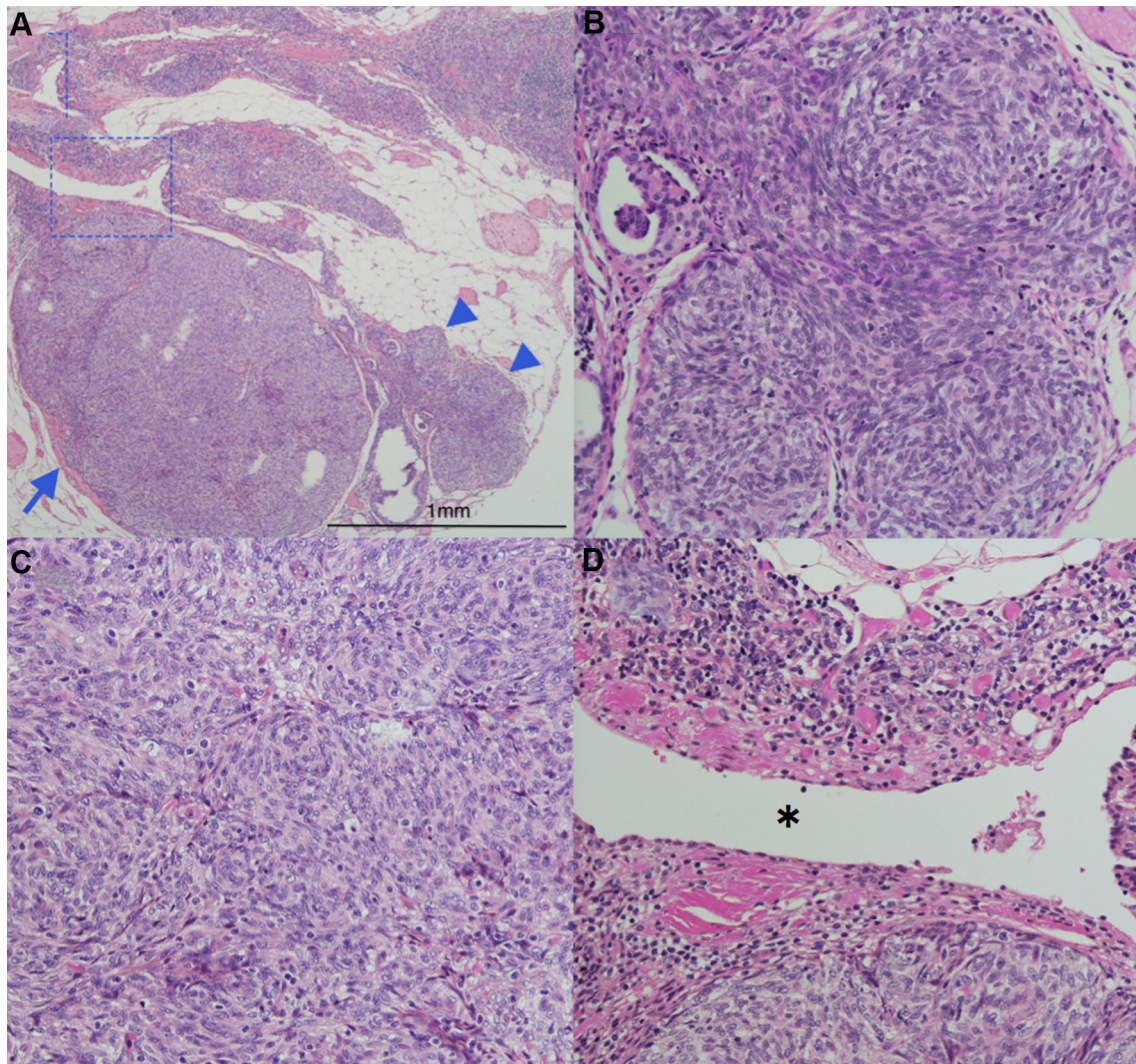


Fig. 3 Microscopic findings of the resected specimen on hematoxylin–eosin staining. **a** Type A microthymoma (*arrow*) and microscopic thymoma (*arrow head*) are detected in the thymus around the thymic cyst ($\times 40$); **b** multiple hyperplastic nodules smaller than 1 mm are detected in the thymic epithelium ($\times 200$); **c** a

high content of spindle epithelial cells is shown ($\times 200$); and **d** enlarged view of the *square* in **a**; the type A microthymoma is located near the cystic wall without complete continuity (*asterisk*, inner cavity of the thymic cyst, $\times 200$)

in the development of the conventional thymoma [5]. In addition, the relationship between microthymoma and microscopic thymoma, which coexisted in the present case, has not been reported. The previously reported cases of microthymoma were all complicated with autoimmune disease, whereas the present case was not complicated with paraneoplastic disorders. Microthymoma, which cannot be detected on CT, had been accidentally found after thymectomy for myasthenia gravis. The present case was the first report on the histology of WHO type A microthymoma.

In the present case, the thymoma was not detected preoperatively. Although the microthymoma did not have continuity with the wall of the thymic cyst, it was very

close to the cystic wall. Therefore, resection of a thymic cyst with enough surrounding thymic tissue would be recommended to avoid incomplete resection of thymoma even in thoracoscopic approach. It is also important for pathologists to carefully observe the thymus around the cystic wall even when there is no obvious lesion around a thymic cyst macroscopically. However, the need for repeat operation for completion total thymectomy is controversial, because there was no residual lesion in the remaining thymus in the present case.

Compliance with ethical standards

Conflict of interest The authors declare that they have no competing interests.

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