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■ BRIEF CASE REPORT ■

A Rare Case of Mixed Type A Thymoma and Micronodular Thymoma with Lymphoid Stroma

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Micronodular thymoma with lymphoid stroma (MNTLS) is a rare subtype of thymoma and accounts for only 1%–5% of all thymoma.[1] Histologically, MNTLS shows characteristic segregating epithelial components in rich lymphoid stroma. Though the histogenesis of MNTLS is not yet elucidated, it is postulated that type A thymoma and MNTLS are common in origin. Here we report a case of mixed thymoma composed of type A thymoma and MNTLS.

CASE REPORT

A 63-year-old man presented with a mediastinal mass incidentally found on routine chest radiograph during a regular health check-up. He had a history of hypertension and diabetes treated with medication. There was no evidence of myasthenia gravis. On further evaluation by chest computed tomography (CT), a 7.3-cm mediastinal mass was identified in the right anterior mediastinum (Fig. 1A). The mass had a lobulated contour, and intratumoral septation suggested a thymic epithelial tumor. No enlargement of mediastinal lymph nodes or pleural seeding was found on CT. He received extended thymectomy via median sternotomy. During the operation, there was no pleural adhesion or invasion into surrounding structures.

On cut sections, the tumor measured 7×6 cm and was enclosed by a thin fibrous capsule. Vague, tan-colored nodules averaging 1.5 cm in size were identified. These were partly separated by thin fibrous septa and areas of numerous tiny cobblestone-like micronodules (Fig. 1B). On histological examination, two different types of thymoma were noted, showing partly infiltrative growth into adjacent fat tissue (Fig. 1C). Large nodules seen were composed of epithelial cells with sparse lymphocytes. Spindled tumor cells formed an organoid pattern, arranged in short fascicles and a solid sheet. The tumor cells had elongated, bland nuclei with fine chromatin and inconspicuous small nucleoli. These characteristics, together with positivity for cytokeratin (CK) and Bcl-2, were compatible with World Health Organization (WHO) type A thymoma. The type A area was ill-defined, showing gradual transition into the rest of the tumor, which harbored a mixture of epithelial and lymphoid components (Fig. 1D). Multiple small epithelial nodules were embedded in the lymphoid stroma. The tumor cells from the smaller nodules were spindled, bland-looking and formed pseudorosettes that had elongated nuclei with fine chromatin and inconspicuous nucleoli, similar to type A thymoma. Epithelial tumor nodules were segregated by lymphoid stroma that occasionally harbored germinal centers (Fig. 1E). Tumor cells were strongly positive for CK and moderately positive for Bcl-2 (Fig. 1F, G). Lymphoid stroma was positive for CD5 (Fig. 1G). Bcl-2 was diffusely positive throughout the lymphoid stroma (Fig. 1H) but was negative in germinal centers. Additional CD20 and CD3 immunohistochemical staining showed reactive B- and T-cells in the lymphoid stroma. The patient was diagnosed ultimately with mixed type A thymoma and MNTLS.

DISCUSSION

MNTLS, first coined by Suster and Moran,[1] is a rare subtype of thymoma. A micronodular pattern of epithelial components

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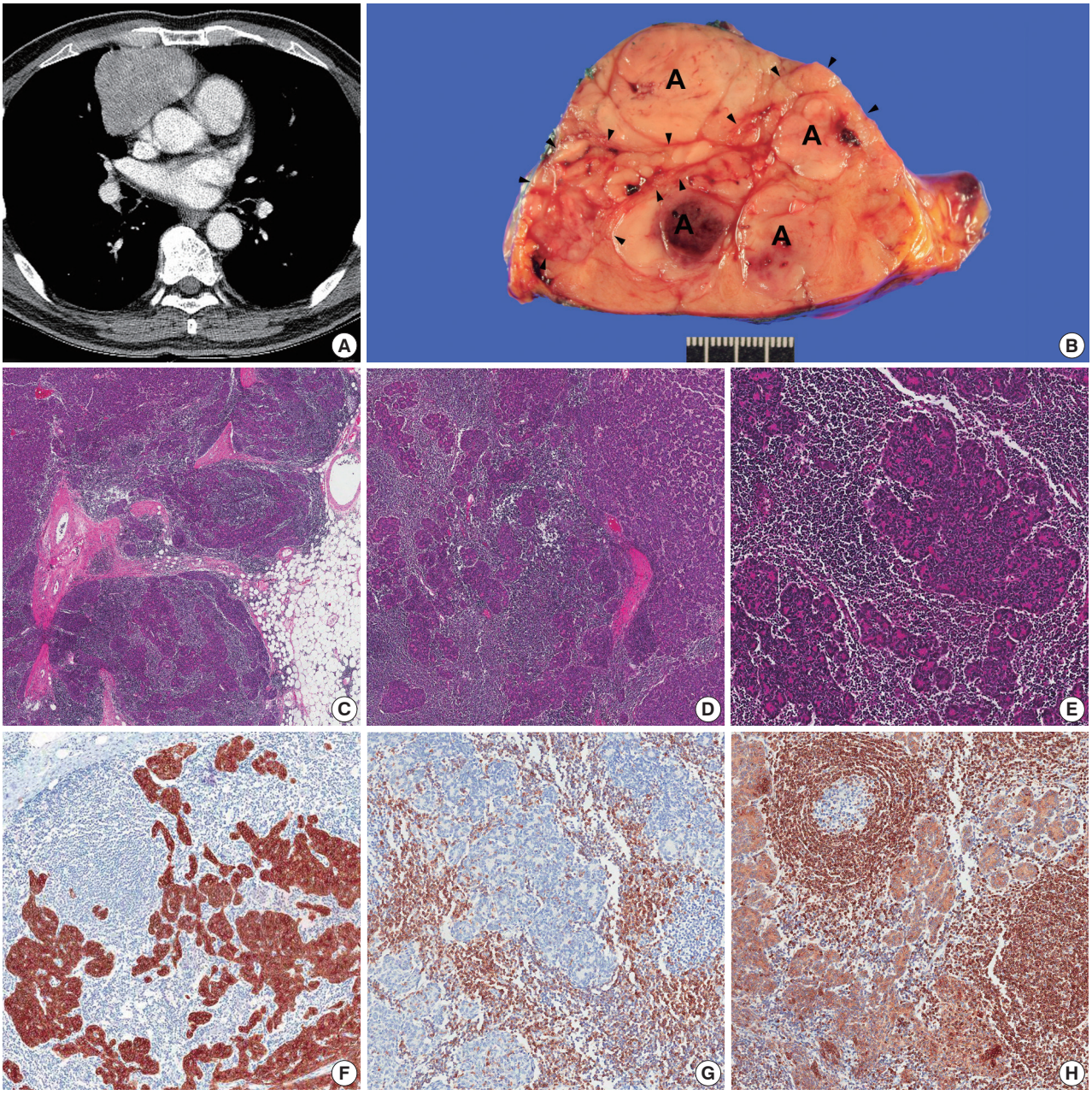

Fig. 1. Mixed Type A Thymoma and Micronodular Thymoma with Lymphoid Stroma. (A) Chest computed tomography imaging demonstrates a lobulated mass in the right anterior mediastinum. (B) Grossly, the tumor is encapsulated with a thin fibrous capsule, and is composed of vague nodules with tiny internodular micronodules, which matched with both type A thymoma (capital A on figure) and micronodular thymoma (arrowheads). (C) A microscopic area of infiltrative growth into fat tissue is noted. (D) A gradual transition is found between type A thymoma and micronodular thymoma with lymphoid stroma (MNTLS). (E) The MNTLS tissue has epithelial micronodules arranged in pseudorosettes that are separated by lymphoid stroma. (F) The tumor cells are strongly positive for cytokeratin, whereas lymphoid stroma lacks any epithelial component. (G) Lymphoid stroma is diffusely positive for CD5. (H) Together with type A thymoma, the epithelial component of MNTLS is positive for Bcl-2. Lymphoid stroma, except for within germinal centers, also is positive for Bcl-2.

is found in approximately 10% of type A and type AB thymoma.[2] Cases accompanied by thymic cyst,[3] heart myxoma,[4] and ectopic lesions arising in the salivary gland[5] have been reported. Characteristically, MNTLS demonstrates small nodules of epithelial components resembling those of type A thymoma within lymphoid stroma that is predominantly composed of B-cells with occasional germinal centers. Being devoid of epithelial components is helpful in excluding type AB thymoma, which also

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contains epithelial components and lymphoid follicles. With its rich B-cells, occasional germinal centers, and nodules of epithelial cells, MNTLS could be misdiagnosed as metastatic carcinoma in a small biopsy specimen.[4] Although the histogenesis of MNTLS is not yet clarified, its medullary epithelial cells suggest MNTLS may be a variant of type A thymoma in the setting of thymic B-cell hyperplasia.[1] Bcl-2, a B-cell marker, is expressed in type A thymoma and thymic carcinoma.[6] We observed Bcl-2 expression in both type A thymoma and MNTLS. These findings support the hypothesis that MNTLS originates from type A thymoma. Stobel *et al.*[7] found that 33% of MNTLS had lymphoid stroma of a monoclonal B-cell population whereas thymic lymphoid hyperplasia or other types of thymoma had a polyclonal population of lymphocytes. Because of the monoclonal lymphoid stroma, they suggested that MNTLS might be a precursor lesion of mediastinal lymphoma.[7] In the present case, the lymphoid stroma was positive for both CD20 and CD3, reflecting a polyclonal lymphocyte nature. Although patient outcomes of MNTLS have not been established because of its rarity, MNTLS has reported cases that have shown excellent prognosis so far.[1,8] Ishikawa *et al.*[9] explained that an immune response induced by intratumoral MNTLS Langerhans cells would contribute to improved patient outcomes.

We report a case of mixed thymoma containing type A thymoma and MNTLS. In the present case, epithelial components of type A thymoma and MNTLS showed similar histologic and immunohistochemical profiles with areas of gradual transition, suggesting type A thymoma and MNTLS share a common histogenesis. Although this tumor showed focal infiltrative growth of MNTLS, it was postulated that this tumor would have a good clinical course.

Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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