THYMIC EPITHELIAL TUMORS A SIX YEAR STUDY

AMUDHAVALLI S SINGARAM
Department of Pathology,
MADRAS MEDICAL COLLEGE AND GOVERNMENT GENERAL HOSPITAL

Abstract:
Thymic epithelial tumours are rare with incidence of 3.2 per 1,000,000. The spectrum of epithelial tumours comprises thymoma, invasive thymoma and thymic carcinoma. In our Institute we conducted a retrospective study on thymic epithelial tumours for a period of 6 years from January 2007 to December 2012. The clinical details, age and sex predilection, association with myasthenia gravis, gross and microscopic findings were analysed. A total of 40 cases were reported of which 30 were thymomas, 5 were invasive thymomas and 5 were thymic carcinomas.

Keyword:
Thymoma, Invasive Thymoma, Thymic carcinoma, Thymic epithelial tumors.

INTRODUCTION:
Thymoma and thymic carcinoma exhibit differentiation towards thymic epithelium. They are commonly located in the anterior mediastinum, accounting for 50% of anterior mediastinal masses. Thymomas exhibit organotypic differentiation which includes lobulation, medullary differentiation, perivascular spaces and presence of immature T lymphocytes. They may be associated with paraneoplastic manifestations like myasthenia gravis, hypogammaglobulinemia and red cell aplasia. Thymic carcinoma constituting 15% of epithelial tumours, shows cytological features of malignancy, lacks the organotypic features of thymoma and usually not associated with myasthenia gravis or paraneoplastic syndrome. Various thymic carcinomas have been described which include squamous cell, lymphoepithelioma like, undifferentiated, small cell, basaloïd, clear cell, mucoepidermoid and adenocarcinoma.

MATERIAL AND METHODS:
A retrospective study of thymic epithelial tumours was conducted in our Institute for a period of 6 years. Clinical details including age and sex predilection, association with myasthenia gravis, gross and microscopic findings were evaluated. The specimens included were both resected specimens and trucut biopsies. The specimens were fixed in 10% neutral buffered
formalin and embedded in paraffin. A 5 µ tissue sections were made and the slides were stained with Haematoxylin& Eosin routinely

RESULTS:
A total of 40 cases were reported, of which 30 cases were thymoma(75%), 5 cases were invasive thymoma (12.5%) and 5 cases were thymic carcinoma(12.5%)(Chart 1). Out of the 35 cases of thymoma and invasive thymoma, 6 were of type A(17%), 6 were of type AB(17%), 4 were of type B1 (11%), 13 were of type B2(38%) and 6 were of type B3(17%)(Chart 2).
Out of the five invasive thymomas, 3 cases were of type B2 and 2 cases were of type B3. Of the 5 cases of Thymic carcinomas reported, 2 cases were small cell carcinoma, 1 case each of mucoepidermoid carcinoma, basaloid carcinoma and poorly differentiated adenocarcinoma. For thymoma, the age incidence ranged from 15- 60 years with a peak around 30-40 years with slight female preponderance(Chart 3).
The age incidence for thymic carcinoma ranged from 26-67 yrs with peak around 60-65yrs. Out of the 40 cases 16 were excision specimens. The size ranged from 2-13cm with mean size of 7.5cm. Of the 35 cases of thymoma, 7 cases of thymoma were associated with myasthenia gravis, out of which 5 were of type B2 and 2 cases were of type B1. 3 cases of B3, one case each of B2 and B1 were associated with pleural effusion. 2 cases of B2 were adherent to pleura. 7 cases had SVC obstruction of which 4 were type B2, one case each of type A, AB and B3(Chart 4).

Chart 3: Distribution of types of thymoma in
Chart 4: Clinical presentation and association.

MICROSCOPY:
Type A Thymoma(Fig. 1&2)

Chart 1: Distribution of thymic epithelial tumors.
Chart 2: Distribution of subtypes of Thymoma.
Type B2 Thymoma (Fig 7&8)
DISCUSSION:
Thymic epithelial tumours are the most frequent tumours of anterior part of mediastinum\(^1\), accounting for 50% of anterior mediastinal tumours\(^2\). They display a broad spectrum of histomorphological features. There is a controversy in the histologic classification of thymic epithelial tumours due to their heterogeneity. Among thymic epithelial tumours, thymomas are more common. In our study, thymomas usually occur in adults with a slight female predilection similar to literature studies. Clinically it can present with pain, cough, hoarseness or symptoms related to myasthenia gravis. Grossly thymomas appear encapsulated, fleshy, tan coloured and show lobulations. **Thymomas** are divided into 2 groups-type A and type B depending on the neoplastic epithelial cells and the lymphoid component. Type A Thymoma (fig1&2) shows spindle cells with bland...
nuclei and indistinct nucleoli arranged in fascicles with few lymphocytes. It comprises 4% of all thymomas and it occurs in mean age of 60.5 years with female incidence of 66%. In our study, it constitutes 17% of thymomas and showed female sex preponderance similar to literature. It ranged from 19-65 years with mean age of 47 years.

Type AB Thymoma is composed of both the components in variable proportions. According to literature, 28% of thymomas belong to this subtype and the mean age of type AB thymoma is 52.2 years with equal sex incidence, whereas our institute study showed an incidence of 17% which is less when compared to literature. And it ranged from 14-60 years with mean age of 40.5 years with male preponderance of 66%. Type B thymomas are further subdivided into B1, B2 & B3 depending upon the proportion of lymphocytes with B1 having richest lymphocyte component. This subtype constitutes 20% of thymomas. It occurs predominantly in females with 62% incidence and mean age group is 46.8 years. Our study showed 11% incidence with age range of 15-43 years. The mean age was 28.2 years with equal sex predilection. Type B2 are characterised by large ovoid cells with vesicular nuclei and prominent nucleoli, the lymphocytic component less than that in B1(Fig.7&8). Being the most common subtype, it constitutes 36% of all thymomas. Mean age is 46.3 years with slight male predilection. This subtype makes the core of thymomas in our study. None of these tumours showed association with myasthenia gravis, as has been reported in previous studies. These tumours show cytological atypia, necrosis and extensive infiltration into surrounding structures. In our study comprising our study, thymic carcinomas occurred in 38% and the age ranged from 28-70 middle aged to elderly patients with male years with mean age of 42.3 years. This subtype showed female predilection to literature, squamous cell carcinoma of about 62%. Type B3 shows polygonal epithelial cells of squamoid carcinoma. Thymic carcinomas reported in...
our institute included 2 cases of small cell carcinoma, 1 case each of mucoepidermoid carcinoma, basaloid carcinoma and poorly differentiated adenocarcinoma. Fig 12. shows a small cell carcinoma composed of small round to oval cells with scant cytoplasm and dark staining nuclei, showing nuclear crowding and moulding. This is a high grade malignancy with behaviour similar to that of small cell carcinoma of lung. The two cases reported in our institute, occurred in a 60 year old female and 64 year old male. We had one case of basaloid carcinoma which is a rare type and is an aggressive tumour. It usually occurs in middle aged to elderly with male preponderance. The case in our study was a 45 year old male. It showed well defined nests of round to oval uniform cells with peripheral palisading, scanty cytoplasm and dark staining nucleus (Fig 13). Mucoepidermoid carcinoma, resembling its salivary gland counterpart is rare in thymus. The mean age is 49 years with slight male preponderance. We reported one case of mucoepidermoid carcinoma in a male aged 26 years. This tumour was composed of islands of epidermoid cells admixed with mucin secreting cells (Fig 14). In thymus, the mucoepidermoid carcinoma is considered to have low malignant potential and relatively a better prognosis. Adenocarcinoma of thymus is very rare and has limited information in literature. In our study, one among the 5 cases of thymic carcinoma was a poorly differentiated adenocarcinoma that occurred in a 67 years old male, displaying non-specific epithelium with clusters of large round to oval malignant epithelial cells with hyperchromatic pleomorphic nuclei. Most of these cases were considered to arise from pre-existing thymoma or a thymic cyst.

CONCLUSION:
Among thymic epithelial tumours, the majority are thymomas with the most common subtype being B2 followed by AB. Type A thymoma has excellent prognosis followed by AB, B1, B2, B3 and thymic carcinoma in the decreasing order. Aggressive behaviour is noted in type B2 and B3 tumours compared with type A, AB, and B1 tumours in terms of invasiveness. About 17% of thymomas showed association with myasthenia gravis and was found to be more common with type B2 thymoma. None of the thymic carcinomas showed association with myasthenia gravis. The most common thymic carcinoma observed was the rare, small cell carcinoma. This study highlights the importance of histological classification of thymic epithelial tumours, since it is an independent prognostic factor.

REFERENCES:

