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Research Paper

Thymoma - A Case Report

Medical Science

KEYWORDS : Thymoma, lymphocytes, thymocytes

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ABSTRACT

The thymic epithelial tumours are an uncommon group of anterior mediastinal tumours. They have a highly variable behaviour. Whether benign or malignant, they have tendency to invade locally, recur and metastasize A 56 year old male, known case of Myasthenia gravis, presented with complaints of difficulty in swallowing along with bilateral ptosis and progressive easy fatigability. He underwent thymectomy. On the basis of WHO classification, it was reported as cortical type- B2 Based on the Koga Masaoke staging system it was type IVa. It was reported as Invasive Thymoma(B2 type-cortical) with infiltration of lung parenchyma and pericardium. No vascular invasion was evident and also the distal resected surgical margins were free of tumour infiltration thereby showing good prognosis.

Introduction

The thymic epithelial tumours are an uncommon group of anterior mediastinal tumours. They have a highly variable behaviour. Whether benign or malignant, they have tendency to invade locally, recur and metastasize.

Historically, the morphologic classification that gained the widest acceptance during the past several decades, particularly in the United States, was the one proposed in 1961 by Bernatz et al[1] from the Mayo Clinic. These authors divided thymomas based on their relative proportion of epithelial cells to lymphocytes and on the shape of the epithelial cells. Their

classification recognized four basic histopathologic variants: lymphocyte-predominant, epithelial-predominant, mixed (lymphoepithelial), and spindle cell thymoma. This classification essentially constituted a variation of a similar formula proposed by Lattes and Jonas[2] 4 years earlier, which also divided thymoma into predominantly lymphocytic, predominantly epithelial, and predominantly spindle cell, but that also included a category of rosette-forming thymoma. A somewhat similar schema also was adopted in Japan, with the exception that the predominantly epithelial tumours were designated as thymoma of polygonal or clear cell type[3]. The Bernatz et al[1] classification and variants thereof have come to be known collectively as the *traditional* classification of thymoma.

Case report

A 56 year old male, known case of Myasthenia gravis, presented with complaints of difficulty in swallowing since 3 days along with bilateral ptosis and progressive easy fatigability since 6 months. General examinations revealed all vitals within normal range. Haematological and biochemical results were within normal range. High resolution computated tomography suggested thymus tumour mass measuring 3x 5 cm in anterior mediastinum with calcification within it, encroaching the ascending aorta along with fibrosis and early bronchiectatic changes. Nerve conduction studies showed decremental response in abductor pollicis brevis, orbicularis oculi and nasalis muscles. Acetyl choline receptor antibodies serum test showed very high value-13.20 nMol/L

The thymus mass resected was sent for histopathological examination,which was measuring 3.8x2.8x1 cm along with pericardium measuring 16x12x1 cm and cut piece of lung measuring 2.6x2x1.6 cm.

Histopathologically a well lobulated tumour comprising of epithelial cells showing vesicular nuclei with prominent nucleoli along with dense population of lymphocytes

(thymocytes).There was no cystic degeneration and necrosis in the tumour. The tumour was locally invasive. No vascular invasion was evident and also the distal resected surgical margins were free of tumour infiltration. Hence it was reported as Invasive Thymoma(B2 type- cortical) with infiltration of lung parenchyma and pericardium.

Figure 1: Showing Thymus mass along with pericardium and a piece of lung

Figure 2: showing lobular arrangement of the tumor.

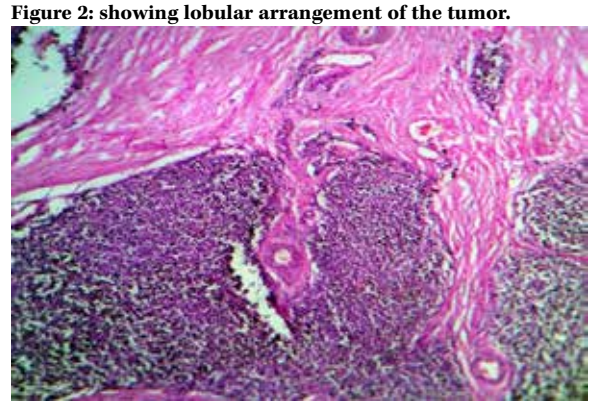

Figure 3: High power view showing presence of epithelial

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cells and dense population of lymphocytes (thymocytes).

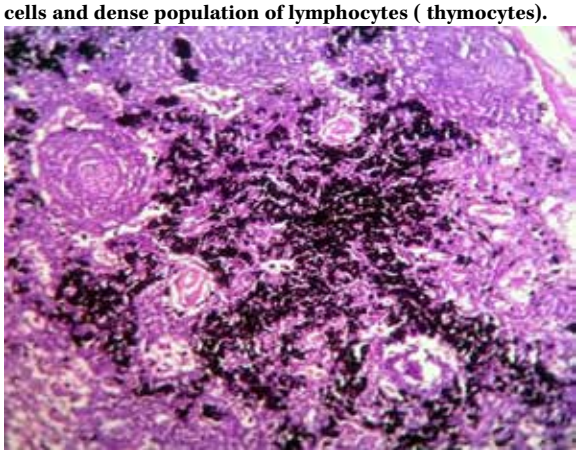

Figure 4: Lung tissue showing presence of anthracotic pigments

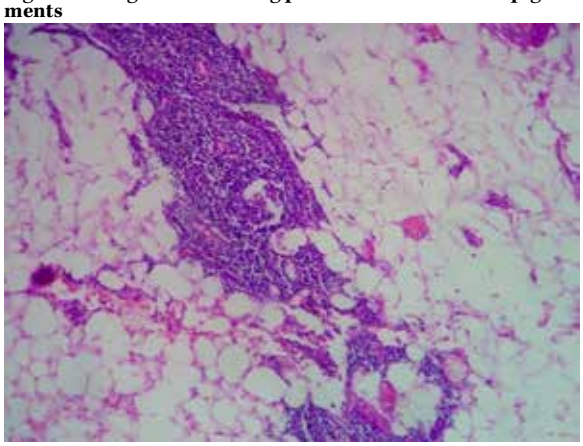

Figure 5: Tumour infiltration in pericardium

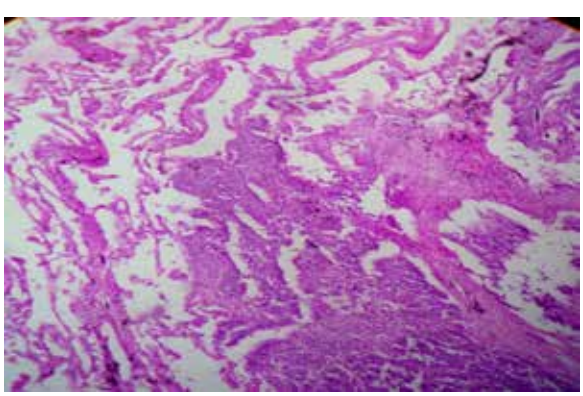

Figure 6: Tumour infiltration in lung parenchyma

Discussion

The diagnosis of thymic epithelial neoplasm has been a topic of controversy for many years. Reasons for this include the lack of predictive value associated with the morphology of these tumours and the multiplicity of classification schemes and terminologies proposed over the

years. Recently, a new classification schema was introduced by the World Health Organization (WHO) in an attempt to standardise nomenclature and facilitate the diagnosis of primary thymic epithelial neoplasms. This schema, although not originally intended as a new histological classification, but rather as a means for translating equivalent terms from the various existing classifications, has represented a major step forward in this direction. Thymomas are an uncommon heterogeneous group of anterior mediastinal tumours that are generally considered indolent. The majority of thymomas are found in the anterior mediastinum. Only a few thymic masses arising out of the anterior mediastinum have been described in literature, and these have been found at ectopic thymus location such as neck, pulmonary hilus, or posterior mediastinum[4,5]. A thymoma occurring in middle mediastinum is extremely rare.

The thymus arises embryologically from the third pharyngeal pouch and branchial cleft on each side. The thymic masses from each side move towards each other and migrate from midline to anterior mediastinum and their final position. Failure of the thymic gland to migrate during embryogenesis leads to ectopic thymic tissue. Surgical excision has been used for both a firm diagnosis and treatment in previously reported cases of middle mediastinum thymoma.

Masaoka staging system is one of the two factors, including completeness of surgical resection, that most strongly correlates with prognosis of thymomas[7]. The role of imaging is to initially diagnose and properly stage thymoma, with emphasis on the detection of local invasion and distant spread of disease. Between 45 and 80% of thymomas are visible by chest radiography . On CT scans, thymomas usually appear as homogeneous solid masses with soft-tissue attenuation and well demarcated borders, located anywhere from the thoracic inlet to the cardiophrenic angle. Thymomas may be oval, round or lobulated and when they are large, cystic or necrotic degeneration may be shown. Calcification may be present in the capsule or throughout the mass. Certain findings, such as encasement of mediastinal structures, infiltration of fat planes, irregular interface between the mass and lung parenchyma, and direct signs of vascular involvement are highly suggestive of invasion. Pleural dissemination ("drop metastases") manifests as one or more pleural nodules or masses.

Table Masaoka-Koga staging system of thymoma

Stage	Description
I	Macroscopically and microscopically encapsulated tumour
IIa	Microscopic invasion through the capsule
IIb	Macroscopic invasion into surrounding fatty tissue
III	Invasion into a neighbouring organ such as the pericardium, great vessels and lung.
IVa	Pleural or pericardial dissemination
IVb	Lymphatic-haematogenous metastases.

(From references 7,8,9 10)

Thymoma Classification Systems

Classification System	
Lattes/ Bernatz Muller-Hermelink WHO	Traditional description of the dominant cell type Presumed origin of the malignant cell (corticomedullary classification) Based on the traditional descriptive classification and the corticomedullary classification
WHO type	Histologic criteria
A	Bland spindle/oval epithelial tumor cells with few or no lymphocytes. (Synonyms: spindle cell thymoma; medullary thymoma)
AB	Mixture of a lymphocyte-poor type A thymoma component and a more lymphocyte-rich type B-like component. (Synonyms: mixed thymoma)

B1	Histological appearance of normal thymus, composed predominantly of areas resembling cortex with epithelial cells scattered in a predominant population of immature lymphocytes, and areas of medullary differentiation(Synonyms: lymphocyte-rich thymoma)
B2	Large, polygonal tumor cells that are arranged in a loose network and exhibit large vesicular nuclei with prominent large nucleoli – background population of immature T-cells always present. (Synonyms: cortical thymoma)
B3	Predominantly medium-sized round or polygonal cells with slight atypia. Epithelial cells are mixed with minor component of intraepithelial lymphocytes. (Synonyms: well-differentiated thymic carcinoma; epithelial thymoma; squamoid thymoma)
C	Heterogeneous group of thymic carcinomas

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