Anaplastic Thyroid Carcinoma with Osteoclast-like Giant Cells

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Abstract
A case of anaplastic thyroid carcinoma with osteoclast-like giant cells is reported. This is an unusual malignant thyroid neoplasm with morphologic resemblance to giant cell tumor of bone. Light microscopy disclosed an undifferentiated carcinoma. Pleomorphic cells and tumour giant cells were accompanied by numerous osteoclast-like multinucleated giant cells.

INTRODUCTION
Anaplastic carcinoma of the thyroid (ATC) is an aggressive tumor, comprising 10% of all primary thyroid malignancies. However, the association of multinucleated giant cells is very rare. For a long time, the histogenesis of anaplastic thyroid carcinoma has been controversial. Some authors have indicated that many of these tumours represent thyroid sarcomas, whereas others have demonstrated that they are carcinomas. Some have suggested that they originate from C cells and are therefore, medullary carcinomas. Currently, most pathologists agree that anaplastic thyroid carcinomas arise from follicular epithelial cells. Coexisting well differentiated follicular or papillary carcinomas in many of these cases support origin from preexisting differentiated carcinomas of the thyroid.

CASE REPORT
A 65 year old woman presented with swelling in the midline of neck since one month along with stridor and dysphagia since 7 days. The neck swelling had gradually increased in size and was associated with increasing breathlessness. Physical examination revealed a midline, 3 cm x 4 cm, hard non-tender mass, not moving with deglutition or protrusion of tongue. Emergency tracheostomy was carried out for stridor, and in the tracheostomy tube, a bit of tissue was found during suction, which was sent for histopathology. A clinical diagnosis of metastases or thyroid carcinoma was made. Histopathology of the tissue bit found during suction revealed a pleomorphic tumor with tumor cells arranged in sheets. The cells were round to polygonal and were characterized by large hyperchromatic nuclei with a high N : C ratio and prominent nucleoli. Cytoplasm was fairly abundant and eosinophilic (Fig. 1). Also seen were multinucleate osteoclast-like giant cells (Fig. 2) having upto 10-15 round nuclei of uniform size along with multiple tumour giant cells. Areas of necrosis were present.

Subsequently, the patient was investigated. A fine needle aspiration of the neck swelling was reported as squamous carcinoma. Histopathology of the sub-glottic growth showed a sarcomatoid carcinoma with osteoclast-like giant cells probably a sarcomatoid carcinoma from the thyroid. X-ray barium swallow showed no obstruction in the oesophagus. CT scan of the neck and upper thorax showed a heterogenously enhancing mass involving the right lobe of the thyroid and isthmus, pushing upper half of trachea to the left side with significant luminal compromise. Tumour marker study revealed markedly increased thyroglobulin levels but calcitonin levels were within normal limits. Immunohistochemical studies performed on formalin fixed paraffin embedded tissue showed strong reactivity for vimentin (Fig. 3) and focal positivity with epithelial membrane antigen. Cytokeratin was, however, negative.

As the mass was inoperable clinically, radiotherapy was given. However the patient was lost for follow-up after 2 months.

DISCUSSION
Anaplastic giant cell carcinomas of the thyroid gland are rapidly growing and highly malignant tumours. Death occurs within 6 months to 1 year. Poor prognosis of the disease is due to compression and invasion of the adjacent vital structures of the neck. Peak incidence is in late adulthood. Preexisting well-differentiated thyroid carcinomas and goiter are usually associated with it. They show a slight female predominance.

Before 1930, giant cell tumors of the thyroid were classified as sarcomas, until Smith proposed an epithelial origin. Most authors have investigated the origin for these tumours. Cibull...
and Gray studied the ultrastructure in 1978 and failed to detect cell junctions or identifiable intermediate cells of epithelial type. Therefore, a mesenchymal cell origin was proposed by them. In 1974, ultrastructural studies done by Jao and Gould demonstrated intercellular junctions, complex intercellular interdigitations, basal lamina and other features of follicular epithelium. They concluded that anaplastic components retain their epithelial characters and show signs of de-differentiation such as decreased desmosomes and loss of ability to form basal lamina. Esmaili et al proposed an epithelial origin based on immunohistochemical and electron microscopic observation.

Co-expression of keratin and vimentin has been reported in normal thyroid cells. It is also seen in many other carcinomas originating in different sites especially tumours with sarcomatoid features. Only small number of tumours react with EMA and CEA.

Role of thyroglobulin in diagnosing ATC is controversial. Some authors have reported 70% of ATCs express this marker. Others were unable to find thyroglobulin expression in any cases. The cause of this discrepancy is not clear.

In summary, immuno-histochemistry represents an extremely helpful ancillary method in the histopathological diagnosis of ATC.

REFERENCES