Turkish Journal of Cancer
Volume 34, No.3, 2004 TJC

Sclerosing mucoepidermoid carcinoma with eosinophilia of the thyroid gland: Description of a case and review of the literature

ÖZKAN KANAT[1], TÜRKKAN EVRENSEL[1], ŞAHSİNE TOLUNAY[2], MUTLU DEMİRAY[1], GÜZİN GÖNÜLLÜ[1], ENDER KURT[1], OSMAN MANAVOĞLU[1]

Uludağ University, Faculty of Medicine, Departments of [1]Medical Oncology and [2]Pathology, Bursa- Turkey

ABSTRACT

Sclerosing mucoepidermoid carcinoma with eosinophilia (SMECE) is a recently recognized malignant neoplasm of the thyroid gland associated with Hashimoto's thyroiditis. At present, only 24 cases of SMECE have been reported in the literature. Although most of these patients had a relatively indolent clinical course and prolonged survival, aggressive behaviour with extrathyroidal extension or distant metastases have been noted in some cases. We present a 74-year-old female patient with SMECE of the thyroid who had an aggressive clinical course resulting in death about 10 months after the diagnosis of SMECE. [Turk J Cancer 2004;34(3):122-126]

KEY WORDS:

Mucoepidermoid carcinoma, sclerosis, eosinophilia, thyroid

INTRODUCTION

Sclerosing mucoepidermoid carcinoma with eosinophilia (SMECE) is a recently recognized malignant neoplasm of the thyroid gland. It was first described by Chan et al. (1) in 1991. They reported eight cases of a distinctive low-grade carcinoma of the thyroid gland occurring in a background of Hashimoto's thyroiditis. At present, only 24 cases of this entity have been described in the literature (1-9). It is likely that 3 of the 6 cases described by Wenig et al. (10) as mucoepidermoid carcinomas are in reality SMECE. Therefore, these three patients probably represent additional examples of SMECE. We report an aggressive case of SMECE and briefly review the literature.

CASE REPORT

A 74-year-old female patient was admitted with complaints of a firm and painless mass in the left portion of her neck that had been present for one year and gradually increased in size over the preceding six months. Physical examination of the patient revealed a firm mass, 6X8 cm in size in the left lobe of the thyroid. Routine blood counts and biochemical tests, including thyroid function tests, were within normal ranges. The serum calcitonine was 26

pg/mL (normal range, 0-50 pg/mL) and serum thyroglobulin was 0.5 ng/mL (0-52 ng/mL). Computerized tomography revealed a 8X8X6 cm mass in the left lobe of the thyroid gland, which extended into retrotracheal, retrolaringeal region and the superior mediastinum decompressing the jugular and carotid arteries. No lymphadenopathy was observed.

The patient underwent operation for a suspected malignant tumor. The tumor could not be removed due to its invasion into surrounding tissues. The operation was terminated after performing numerous incisional biopsies.

The surgical specimen was fixed in 10% formalin and processed routinely for light microscopy. Paraffin embedded sections were stained with hematoxylin and eosin (H&E), periodic acid-Schiff (PAS), alcian blue and mucicarmine. On histological examination, short cords and small solid islets, which were formed by atypical epithelial cells were observed in a densely hyalinized fibrous stroma (Figure 1). The cells were medium to large sized, round or polygonal, and contained a moderate amount of pale eosinophilic or clear cytoplasm (Figure 2). The nuclei were round or polygonal with centrally placed nucleolus. In some areas, the cells showed obvious squamous differentiation with discernible intercellular bridges and keratin pears formation. There was vascular invasion, particularly of medium-sized vessels, with luminal obliteration by the tumor cells. Numerous eosinophilic infiltration intermixed with lymphocytes and plasma cells were observed in tumoral tissue. Mitotic figures were rarely observed in the tumor cells. Luminal formations, which were filled with slight basophilic material, were found in the middle of some cell islets. This material showed positive staining with PAS, mucicarmine and alcian blue. The non-neoplastic portion of the thyroid tissue showed typical features of Hashimoto's thyroiditis. By immunohisto-chemistry, tumor cells were strongly positive for cytokeratin, but negative for thyroglobulin and calcitonin. Pathological diagnosis was compatible with SMECE of the thyroid.

The tumor was considered unresectable and the patient received a total of 5400 cGy radiotherapy to thyroid, neck, and upper mediastinum regions for eight weeks. Following radiotherapy, clinical findings and computerized tomography showed progression of disease. The patient did not receive chemotherapy because she had a poor performance status. She was managed with supportive care and she died about 10 months after the diagnosis of SMECE.

DISCUSSION

SMECE is a recently described tumor that bears no resemblance to any of the usual epithelial thyroid neoplasms. Histologically this tumor is composed of small nests or strands of squamous cells with rare mucous cells and characterized by extensive sclerosis, squamous and glandular differentiation, a concomitant inflammatory infiltrate rich in eosinophils and a background of Hashimoto's thyroiditis in the involved thyroid tissue. The neoplastic cells are immunoreactive for cytokeratin, but not for thyroglobulin or calcitonin. The causes of eosinophilic infiltration is not known, but secretion of eosinophil chemotactic factors by the tumor cells may be responsible (11).

In a review of all 24 SMECE cases (Table 1), including our own, patients ranged in age 32-74 years (mean, 56.5 years). Woman were predominantly affected (female:male ratio, 23:1). Most of the patients with SMECE had a relatively indolent clinical course and were alive with or without evidence of disease for periods ranging up to 12 years. Rare cases of lung, bone and other distant metastasis have been reported (3,4,7,8). Our case had a more aggressive clinical course than any other case of SMECE previously reported. It is difficult to exclude definitely that in this patient SMECE was associated with an anaplastic carcinoma, not sampled by the biopsy, although numerous incisional biopsies were performed. We hypothesized that our patient developed an anaplastic carcinoma that led to the death of the patient. The presence of anaplastic carcinoma, well reported as a complication of several low-grade thyroid carcinomas, would better explain the aggressive clinical course in our patient (12).

SMECE should be differentiated from other primary thyroid tumors that can show foci of squamous differentiation, especially papillary carcinoma or medullary carcinoma; primary or metastatic squamous cell carcinoma, and conventional mucoepidermoid carcinoma (MEC) of the thyroid gland (9,13,14). Papillary carcinoma can be distinguished from SMECE by its characteristic nuclear morphology and

Table 1
Survey of sclerosing mucoepidermoid carcinoma with eosinophilia of the thyroid by literature data

Reference	Age (yr) / Gender	Extrathyroidal extension / Metastasis	Treatment	Follow-up
Chan et al. (1) 1991	35/F	Muscle, esophageal wall, left recurrent laryngeal nerve	Total thyr and RT	ANED 5.5 yr
	64/F	None	Left lobectomy	ANED 1 yr then lost to follow-up
	71/F	Muscle	Total thyr and RT	ANED 3.5 yr
	61/F	None	Left lobectomy	ANED 3 yr
	43/F	Trachea	Total thyr,	ANED 3 yr
	46/F	Lymph node, perithyroidal soft tissue	Total thyr, node diss	NA
	69/F	None	Total thyr,	NA
	69/F	Muscle, trachea, esophagus	Total thyr,	NA
Sim et al. (3) 1997	70/F	Lymph node, perithyroidal soft tissue, lung, bone	Total thyr, node diss and CT	AWD 6 yr
	69/F	Lymph node, perithyroidal soft tissue, trachea, periesophageal tissue	Laryngopharyngectomy and esophagectomy, node diss and RT	ANED 12 yr
Geisinger et al. (4) 1998	39/F	Adhesion to vessels	Total thyr and neck diss Add Treatment: CT	AWD 4.5 yr
	61/M	Cervical lymph node, esophagus	Total thyr and node diss Add Treatment: CT	AWD 2 yr
Cavazza et al. (6) 1999	32/F	Soft tissue	Total thyr,	ANED 14 mo
Chung et al. (7) 1999	57/F	Cervical lymph node	Total thyr, neck diss and RT	AWD 2 yr
Solomon et al. (8) 2000	39/F	Cervical and paratracheal lymph nodes	Total thyr, node diss and RT	NA
Baloch et al. (9) 2000	38/F	Muscle, cervical lymph nodes	Total thyr and right neck diss	ANED 3 mo
	47/F	None	Right lobectomy	ANED 2 yr
	73/F	None	Right lobectomy	NA
	64/F	None	Right lobectomy	NA

ANED: alive with no evidence of disease; AWD: alive with disease; CT: chemotherapy; RT: radiotherapy; thyr: thyroidectomy; diss: dissection; NA: not available; Add. Treatment: additional treatment (refers to any subsequent therapy for local recurrence or metastatic disease)

its positivity for thyroglobulin (13,14). Lack of lymphocytic thyroiditis and positive calcitonin staining differentiate medullary carcinoma from SMECE (13,14). Primary squamous cell carcinoma of the thyroid is extremely rare and is classified as anaplastic carcinoma. It is distinguished from SMECE by its histologic features including diffuse growth sheets and large islands, marked nuclear atypia, numerous mitoses, and frequent necrosis (15).

Histologically MEC exhibits larger, more confluent sheets and nests of tumor cells when compared with the small cell nests and strands of SMECE and no eosinophilic infiltration. Vascular invasion with luminal obliteration of the medium-size vessels is observed in only SMECE. SMECE shows the more classical histological features of Hashimoto's thyroiditis in the uninvolved thyroid parenchyma. However, in MEC the remaining thyroid usually shows lymphocytic thyroiditis in about half of the MEC cases. By immunohistochemistry, MEC is frequently thyroglobulin positive, whereas SMECE is negative for thyroglobulin (16,17).

The histogenesis of SMECE of the thyroid remains unclear and controversial. Based on its constant association with Hashimoto's thyroiditis, it has been suggested that SMECE originates in the benign squamous nests that are often found in Hashimoto's thyroiditis (1,3,4). Many authors have suggested that this tumor develops from ultimobranchial body vestiges or solid cell nest (9,14).

In conclusion, although originally described as a relatively indolent neoplasm, SMECE may display aggressive behavior manifested by distant metastasis. It occurs predominantly in older women with Hashimoto's thyroiditis. It is necessary to add SMECE to the list of differential diagnosis of thyroid tumors, although it is an extremely

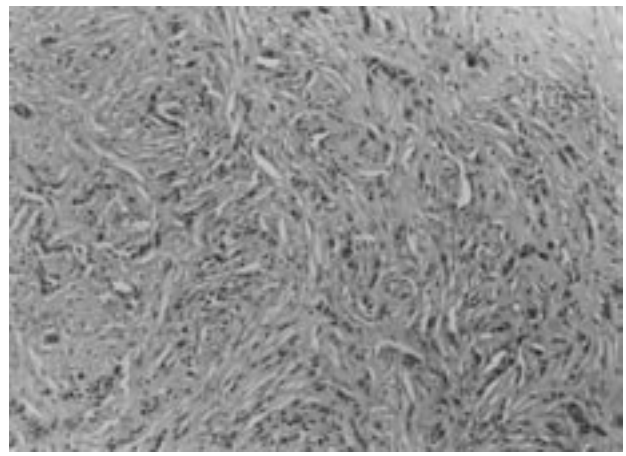

Fig 1. Short cords and small solid islets formed by atypical epithelial cells in a densely hyalinized fibrous stroma (H&E, x100)

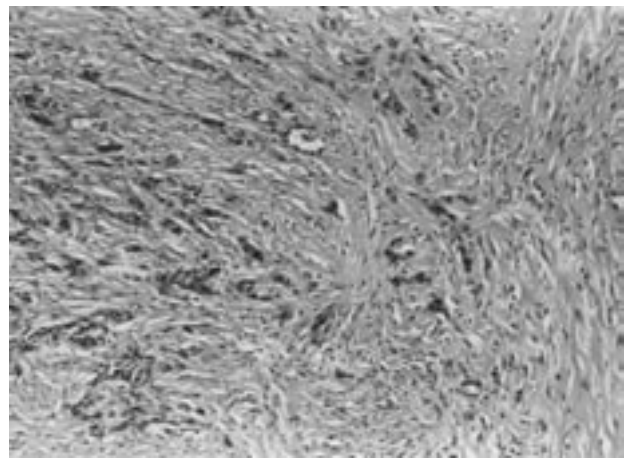

Fig 2. Medium to large sized, round or polygonal tumor cells with a moderate amount of pale eosinophilic or clear cytoplasm and oval nuclei (H&E, x100)

References

1. Chan KJC, Albores-Saavedra J, Battifora H, et al. Sclerosing mucoepidermoid thyroid carcinoma with eosinophilia. A distinctive low-grade malignancy arising from the metaplastic follicles of Hashimoto's thyroiditis. Am J Surg Pathol 1991;15:438-48.
2. Bondeson L, Bondeson AG. Cytologic features in fine-needle aspirates from a sclerosing mucoepidermoid thyroid carcinoma with eosinophilia. Diagn Cytopathol 1996;15:301-5.
3. Sim SJ, Ro JY, Ordonez NG, et al. Sclerosing mucoepidermoid carcinoma with eosinophilia of the thyroid: report of two patients, one with distant metastasis, and review of the literature. Hum Pathol 1997;28:1091-6.
4. Geisinger KR, Steffee CH, McGee RS, et al. The cytomorphologic features of sclerosing mucoepidermoid carcinoma of the thyroid gland with eosinophilia. Am J Clin Pathol 1998;109:294-301.
5. Ro JY, Sim SJ, Ordonez NG, et al. Sclerosing mucoepidermoid carcinoma with eosinophilia of the thyroid (SMECE): clinicopathologic and immunohistochemical studies of 4 cases. Mod Pathol 1998;11:59A.

6. Cavazza A, Toschi E, Valcavi R, et al. Sclerosing mucoepidermoid carcinoma with eosinophilia of the thyroid: description of a case. Pathologica 1999;91:31-5.
7. Chung J, Lee SK, Gong G, et al. Sclerosing mucoepidermoid carcinoma with eosinophilia of the thyroid glands: a case report with clinical manifestation of recurrent neck mass. J Korean Med Sci 1999;14:338-41.
8. Solomon AC, Baloch ZW, Salhany KE, et al. Thyroid sclerosing mucoepidermoid carcinoma with eosinophilia: mimic of Hodgkin disease in nodal metastases. Arch Pathol Lab Med 2000;124:446-9.
9. Baloch ZW, Solomon AC, LiVolsi VA. Primary mucoepidermoid carcinoma and sclerosing mucoepidermoid carcinoma with eosinophilia of the thyroid gland: a report of nine cases. Mod Pathol 2000;13:802-7.
10. Wenig BM, Adair CF, Heffess CS. Primary mucoepidermoid carcinoma of the thyroid gland: a report of six cases and a review of the literature of a follicular epithelial tumor. Hum Pathol 1995;26:1099-108.
11. Lowe D, Jorizzo J, Hutt MSR. Tumor-associated eosinophilia: a review. J Clin Pathol 1981;34:1343-8.
12. Cameselle-Teijeiro J, Febles-Perez C, Sobrinho-Simoes M. Papillary and mucoepidermoid carcinoma of the thyroid with anaplastic transformation: a case report with histologic and immunohistochemical findings that support a provocative histogenetic hypothesis. Path Res Pract 1995;191:1214-21.
13. LiVolsi VA. Surgical pathology of the thyroid. Philadelphia: WB Saunders; 1990.
14. Rosai J, Carcancui ML, DeLellis RA. Tumors of the thyroid gland. Atlas of tumor pathology. 3rd series, Fascicle 5. Washington, DC: Armed Forces Institute of Pathology; 1992.
15. Bronner MP, LiVolsi VA. Spindle cell squamous carcinoma of the thyroid: unusual anaplastic tumor associated with tall cell papillary cancer. Mod Pathol 1991;4:637-43.
16. Katoh R, Sugai T, Ono S, et al. Mucoepidermoid carcinoma of the thyroid gland. Cancer 1990;65:2020-7.
17. Mizukami Y, Matsubara F, Hashimoto T, et al. Primary mucoepidermoid carcinoma in the thyroid gland. Cancer 1984;53:1741-5.