Scalp Metastases from Thyroid Carcinoma

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Introduction

Thyroid carcinoma is the most common endocrine malignancy. It usually presents as a thyroid nodule, but occasionally patients manifest with unusual features [1,2]. The presence of metastatic disease at the time of diagnosis is a bad prognostic feature. Carcinomas derived from follicular epithelial cells include papillary and follicular carcinoma, poorly differentiated carcinoma (also known as “insular” carcinoma), and anaplastic carcinoma. Papillary carcinoma is the most common of these in North America. The most common site of metastasis is to lymph nodes in the neck [3-4]. Rarely, papillary and follicular carcinomas spread haematogenously, involving lung, liver, bone and occasionally brain [5]. Anaplastic thyroid carcinoma is a rare and aggressive tumor that can metastasize to the skin in the context of diffuse body metastases [6]. By contrast, cutaneous metastasis from differentiated thyroid carcinoma is a rare manifestation of disseminated disease. Scalp is the most common site of thyroid carcinoma skin metastases. The metastatic deposits usually present as flesh colored nodules that are tender, may be itchy, and can ulcerate. The average survival after cutaneous metastasis is 19 months, because it usually occurs in the context of disseminated neoplastic disease. Skin metastasis from a thyroid carcinoma is rarely a presenting feature of an underlying malignancy. In this case the skin lesion was the initial manifestation of thyroid cancer.

Case Report

A 71 year old woman presented with a growing, flesh colored nodule of the parietal scalp and a thyroid swelling. The concern of the treating physician at that time was to rule out a cyst or adnexal tumor of skin. Fine needle aspiration cytology was performed. On cytological examination, the lesion was composed of tumor cells with large nuclei and prominent nucleoli, nuclear grooves and occasional intranuclear inclusions. On the basis of the nuclear features

the diagnosis was established to be a papillary carcinoma of thyroid. Immunohistochemical analysis showed strong nuclear TTF-1 reactivity and cytoplasmic thyroglobulin staining. The tumor was negative for high molecular weight keratins, cytokeratin 20 and S100 protein. Staining for carcinoembryonic antigen and epithelial membrane antigen did not reveal tubular adnexal structural formations. The features were consistent with metastatic papillary thyroid carcinoma. Computed tomography scan showed metastases of thyroid cancer to both lungs with mediastinal lymphadenopathy (Fig.1). Patient was sent to a referral center and she underwent surgical removal of the thyroid gland. After surgery, I¹³¹ treatment and external beam radiation therapy, the patient was treated with levothyroxine (0.1 mg daily).

Discussion

Cutaneous metastasis from thyroid carcinoma is rare. It usually occurs in the setting of disseminated neoplastic disease. Dahl et al [7], found 43 cases of thyroid carcinoma with skin metastases. Papillary carcinoma was the most commonest (41%) thyroid cancer resulting in skin metastases, followed by follicular carcinoma in 28% cases, while anaplastic carcinoma and medullary

Fig. 1 : Photograph showing CT scan with bilateral lung metastases from thyroid carcinoma.

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Fig. 3 : Photomicrograph showing: (3a) FNAC from thyroid (Leishman giemsa stain), (3b) FNAC from scalp (Leishman giemsa stain), (3c) FNAC of thyroid showing nuclear features of papillary carcinoma of thyroid (Leishman giemsa stain), (3d) IHC of smears showing TTF-1 positivity, (3e) IHC of smears showing thyroglobulin positivity, (3f) IHC of scalp FNAC smears negative for high molecular weight keratins

carcinoma contributed 15% of cases each. The scalp was the most common site of involvement. In contrast, Koller et al [8], reported that follicular carcinoma has a greater preponderance than papillary carcinoma for cutaneous metastases. The condition is equally common in men and women. Metastatic thyroid carcinoma involving the skin can easily be mistaken for a primary adnexal skin tumor. The development of antibodies against the thyroid transcription factor TTF-1 has provided a useful tool to screen for metastatic carcinomas. Anti-TTF-1 antibodies have proved very useful in distinguishing pulmonary and thyroid carcinoma from other primary carcinomas or mesothelioma and in distinguishing metastatic small cell carcinoma of the lung from primary cutaneous Merkel cell carcinoma. They may also be useful in distinguishing neuroendocrine tumors of the lung from well differentiated neuroendocrine tumors from other sites, such as the gut and pancreas. Thyroglobulin expression identifies carcinomas of thyroid follicular cell derivation, including both papillary and follicular types, but is not found in lung carcinomas [9-10]. Medullary carcinomas are readily identified by neuroendocrine markers, including synaptophysin, chromogranin and CD 56, in addition to the specific tumor marker of this entity, calcitonin. Clinically, the investigation of a flesh coloured skin nodule, particularly in the scalp area, should include the possibility of metastatic thyroid carcinoma.

Conflicts of Interest

None identified

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