CASE REPORT

Overt Skeletal Metastases in a Patient of Occult (Microscopic) Follicular Thyroid Carcinoma: a Rare Case

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Abstract Occult follicular thyroid carcinoma (FTC) presenting as distant metastases is a rare occurrence. However, despite being occult in majority of these cases, primary tumor can be detected on thyroid imaging or during surgery. Here, we present an extremely rare case of an occult FTC with overt skeletal metastases in which primary tumor was discernible only on microscopic examination.

Keywords Differentiated thyroid carcinoma · Metastatic FTC · Occult thyroid carcinoma · Occult primary malignancy

Introduction

Follicular thyroid carcinoma (FTC) is the second most common malignancy affecting the thyroid gland and accounts for about 10–25% of thyroid malignancy [1]. Hematogenous spread of FTC to distant sites occurs in around 50% cases, mostly to lungs and bones [2]. Cases of occult FTC presenting as distant metastases have been reported in literature. But in all these cases, a thyroid lesion could be detected by preoperative imaging or gross examination of surgical specimen [3–6].

Hence, majority of occult thyroid primary tumors could be detected. However, it is an extremely rare occurrence when primary lesion can be identified with difficulty even on microscopic examination of thyroidectomy specimen. Till now, only one such case report has been published in literature where a patient presented with multiple lytic skull metastases from an occult FTC [7]. In this report, we present an extremely rare case of occult FTC with overt chest wall and vertebral metastases whose thyroidectomy specimen on microscopic examination revealed only a single foci of vascular invasion adjacent to a sclerosed area.

Case Report

A 56-year-old man presented to us with complaints of gradually progressive swelling over the left side of anterior chest wall for preceding 2 years and pain in both thighs for 20 days. For preceding 10 days, the patient had developed weakness in both lower limbs and was unable to walk. There was no other contributory history. On examination, a 15 × 10-cm swelling was seen on the left thoracic cage involving the anterior and lateral chest wall (Fig. 1). The swelling was fixed to bony cage and was not involving the skin and overlying pectoral muscles. It was non-compressible and non-pulsatile. Besides, a matted mass of lymph nodes measuring 4 × 4 cm was detected in the right supraclavicular fossa, but thyroid was not palpable. Examination of spine revealed paraspinal tenderness at the level of 12th thoracic vertebrae.

Plain radiograph of chest revealed a large opacity on the left side of the chest along with compression of the left lung, and X-ray spine showed a lytic lesion in 12th thoracic vertebra with compression fracture. A MRI scan of chest and spine was performed which revealed a large heterogenous mass involving multiple ribs on the left side with both intra-thoracic and extra-thoracic extension (Fig. 2). There were compression

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Fig. 1 Large left chest wall skeletal metastasis

fractures involving 12th thoracic and L1 vertebrae. The patient also underwent a ⁹⁹Tc MDP bone scan which was suggestive of widespread skeletal metastases involving multiple ribs, thoracic, and lumbar vertebrae. A core biopsy from the chest wall swelling was performed, and it was suggestive of metastasis from FTC. Thereafter, a neck ultrasonography (USG) was performed which failed to reveal any thyroid lesion but confirmed the presence of right supraclavicular lymph nodes. Fine needle aspiration cytology examination of the right supraclavicular lymph node was suggestive of tubercular lymphadenitis.

With a diagnosis of metastatic FTC with occult primary, the patient was counseled for surgery and total thyroidectomy was performed. No visible thyroid nodule was found on gross histology examination. On careful microscopic examination, pathologists were able to identify a small sclerosed area of approximately 2 mm in size (Fig. 3) and a single focus of vascular invasion in the right lobe (Fig. 4). Palliative radiotherapy was administered to painful spine lesions on fifth

Fig. 2 MRI scan showing skeletal metastasis involving multiple ribs on the left side and having intra-thoracic and extra-thoracic extensions

Fig. 3 Photomicrograph showing a sclerotic nodule without any evidence of malignancy

post-operative day. In view of multiple metastases, surgical resection of skeletal metastases was not possible, and even the palliative resection of chest lesion was considered due to high morbidity. He received external beam radiotherapy (EBRT) for palliation of painful vertebral metastases (D4–6 and 12) after surgery. The patient was thereafter referred for whole body radioiodine (WBRAI) scan and therapy. He received 150 mCi of ¹³¹I initially. The post-therapy WBRAI scan showed multiple areas of increased tracer uptake in ribs, skull, and multiple vertebrae. He was put on TSH suppression. The patient was also given an anti-tubercular therapy. The patient has since then received three more doses of ¹³¹I, at six monthly intervals. His serum thyroglobulin (Tg) value remained persistently high (> 300 ng/ml). His muscle weakness and pain improved initially, but later, he had a progression of disease with appearance of new painful lesions in vertebrae, skull bone, and pelvic bone. He was put on zoledronic acid to which he responded. As during initial follow-up, the patient continued to have iodine avid metastases; FDG-PET was not considered. Later, PET was being considered before deciding if patient could benefit from sorafenib (tyrosine kinase inhibitor), but he was too sick to receive therapy, hence it was deferred. The patient is alive with disease 40 months after reporting to us.

Fig. 4 Photomicrograph showing an area of vascular invasion

Discussion

In this report, we presented an extremely rare case of an occult FTC with overt skeletal metastases in which primary tumor was discernible only on microscopic examination. The initial diagnosis was clinched by the biopsy of metastases. The patient had a total thyroidectomy followed by radioiodine therapy to which he responded initially followed by later progression of disease.

Distant metastasis from DTC is relatively common occurring in around 50% cases, but distant metastasis evident at initial presentation is an uncommon event occurring in about 4% cases [8]. DTC rarely presents as metastatic disease with occult primary, and even in this rare group of patients, most of the patients have papillary carcinoma of thyroid (PTC), making the presentation of FTC as an occult tumor with overt metastasis an extremely rare presentation [3]. More important than this is the fact that ours is the second such case where primary tumor was detected on microscopy only; otherwise, majority of occult thyroid primary can be detected on USG or on gross examination of thyroidectomy specimen.

Occult primary tumors are defined as histologically proven metastatic malignant tumors whose primary site cannot be identified during pretreatment evaluation [9]. The presentation can vary but the prognosis in majority of patients remains poor. Early dissemination, aggressiveness, and unpredictability of metastatic pattern are characteristic of these malignancies [10]. Selected patients with favorable subsets of occult primary tumors have median overall survival times in the range of 12–36 months [11].

Diagnosis of metastases from occult FTC is relatively easy on histology. Presence of colloid in follicles makes diagnosis straightforward, in cases of suspicion, Tg and/or TTF immunostaining can be employed. Management of such cases is total thyroidectomy followed by radioiodine therapy. Despite widespread metastases, cases of occult FTC should be offered therapy for consideration of pain palliation and improving quality of life. The preferred hierarchy of treatment for metastatic disease is surgical excision of loco-regional disease in potentially curable patients, ¹³¹I therapy for RAI-responsive disease, external beam radiation therapy or other directed treatment modalities, e.g., thermal ablation, TSH-suppressive thyroid hormone therapy for patients with stable or slowly progressive asymptomatic disease, and systemic therapy with kinase inhibitors especially for patients with significantly progressive macroscopic refractory disease. Surgery is reserved for potential cure in limited metastases or in selected incurable

patients to prevent complications such as the CNS and for facilitation of RAI therapy [2, 12].

Compliance with Ethical Standards

Informed Consent Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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