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# A rare metastatic site of Hürthle cell thyroid carcinoma: A case report

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## Abstract

Hürthle Cell Thyroid Carcinoma (HCTC) is a differentiated thyroid carcinoma that accounts for only 3% of all thyroid cancer. It's believed that this tumor is similar to follicular cell carcinoma. Metastasis at initial diagnosis is frequent and it affects especially the liver and the bone. The chest wall is a rare site of metastasis from thyroid cancer. We report a rare case of a 56-year old man with a history of HCTC having an isolated posterior chest wall mass. Histologic and immunohistochemical examinations confirmed the diagnosis of metastatic HCTC.

The teaching point is that a chest wall mass should prompt consideration of metastatic cancer in the differential diagnosis.

## Keywords

chest wall metastasis; Hürthle cell; thyroid carcinoma

## Introduction

HCTC is a rare type of differentiated thyroid cancer, accounting for only about 3% of all thyroid carcinomas. HCTC is regarded to be an oxyphilic variant of follicular thyroid cancer according to the World Health Organization classification [1]. However, genomic studies revealed that HCTC is a unique thyroid malignancy distinct from papillary and follicular thyroid cancer [2]. Hürthle cell cancer has the highest incidence of metastasis among the differentiated thyroid cancers with a percentage of 34% of the patients overall [3]. The lungs, bones, and central nervous system are the most prevalent sites of metastases.

We present a rare case of an isolated chest wall metastasis from HCTC.

## Case Presentation

A 56 year old man was referred to our institution as he noticed a hard non painful lump at the left upper back fold for 3 weeks. He is a non- smoker. Past medical history included having a total thyroidectomy and bilateral neck dissection followed by radioiodine therapy almost a year ago for HCTC with levothyroxine suppression treatment. On examination, there was a 12*11 cm mass under the left shoulder that seems to be fixed with no invasion of the skin (figure1a and 1b). Scan imaging revealed a 12*11*6.5 soft tissue density mass on the left posterior chest wall with invasion of the 9th rib. Biopsy of

lesion revealed histology and immunohistochemical staining suggestive of metastatic HCTC. His thyroglobulin level at this time was 22479 ng/mL (normal reference 0.2–70 ng/mL). The free T4 and TSH levels were normal. The patient underwent wide tumor excision and resection of the 7th the 8th and the 9th rib (Figure 2) with coverage of the thoracic defect by placement of rotation flap. Histological examination showed a solid and trabecular growth pattern (Figure3a and 3b) made of oncocytic cells. The cells are large and have polygonal shape with well-defined cell borders. The cytoplasm is abundant, finely granular, with round nuclei and fine dispersed chromatin (Figure 4). Some mitoses are noted. On immunohistochemical study, the tumor cells stained positively with TTF1 (Figure 5). They are also positive for Cytokératin and CD56. However, reaction is negative with Synaptophysin, Chromogranin and Desmine. A comparison of these findings with those of sections from the primary lesion showed a close histopathologic and immunohistochemical resemblance, leading to the diagnosis of metastatic HCC of the thyroid. A comparison of these findings with those of sections from the primary lesion showed a close histopathologic and immunohistochemical resemblance, leading to the diagnosis of metastatic HCC of the thyroid. Postoperative whole-body scintigraphy scan didn't identify any distant uptake. The patient didn't receive ablative iodine 131 therapy. At 6-months follow-up from the resection, the patient remained asymptomatic, his imaging was negative for recurrence in the chest wall operative site, and his thyroglobulin had decreased to 455, 3 ng/ml.

## Discussion

HCTC also known as oncocytic cell neoplasm is considered as an oxyphilic type of Follicular carcinoma [4]. Some factors are associated with a high risk of HCTC such as iodine excess, history of thyroid disease, radiation exposure. A germ-line mutation on chromosome 19p 13.2 was reported [5]. The peak age of incidence is 50–60 years with male predominance wish is similar to our case [2]. The Hürthle cells were first described as a follicular-derived cell. They are also called eosinophilic cells with a 'swollen' cytoplasm because of substantial eosinophilic, abundant granular cytoplasm and accumulation of altered mitochondria. When Hürthle cells comprise 75% of an encapsulated nodule, the lesion is termed Hürthle cell tumor [1]. Although HCTC is classified as follicular cancer by the WHO, it has a different oncocytic expression and worse prognosis. About 20 – 30% of the cases had metastatic extension at the time of initial treatment [2].

The most common primary malignant chest wall tumor type is sarcoma, arising from soft, cartilaginous or bone tissue. Most metastases to the chest wall are from adjacent structures, commonly breast, lung, pleura and mediastinum [6]. A review of the literature showed rare cases of chest wall metastasis from thyroid carcinoma. Few single institution experiences of metastatic HCTC were published. The most common site of metastasis is to the lung followed by the bone [2,7]. To our knowledge this is the first case that illustrates chest wall metastasis from a HCTC.

Histologically, chest wall metastasis from HCTC is diagnostically challenging when no clinical information is provided. Lesions considered in the differential diagnoses are mainly other oncocytic tumors from different internal organs, such as the kidney, adrenal gland, parathyroid, and salivary gland [8]. The immunohistochemical study is mandatory to distinguish the type of neoplasm. The combination of TTF-1 and thyroglobulin is useful in differentiating a thyroid origin from other origins. The present case illustrated only TTF1-positive tumor cells without thyroglobulin reactivity, emphasizing the

importance of clinicopathologic correlation and the need to use a panel of markers to avoid misdiagnosis.

Therapeutic administrations for metastatic Hürthle cell cancer are limited since it's a rare malignant carcinoma. Surgery is the primary treatment based on wide resection and appropriate reconstruction of major defects. Compared with other thyroid carcinomas, HCTC has a lower avidity for radioactive iodine (RAI) `[7,9]. Reportedly, approximately 10% of metastases take up radioiodine, compared with 75% of metastases from follicular carcinoma. Hürthle cell carcinoma is considered a radiosensitive tumor. Radiation therapy may provide palliative relief from symptomatic metastases in patients in whom surgical excision is incomplete or impossible [10]. This therapy can also be considered for tumors that do not take up RAI. Chemotherapy for metastatic differentiated thyroid cancer is usually ineffective. However, some experimental trials have yielded promising result [11].

## Figures

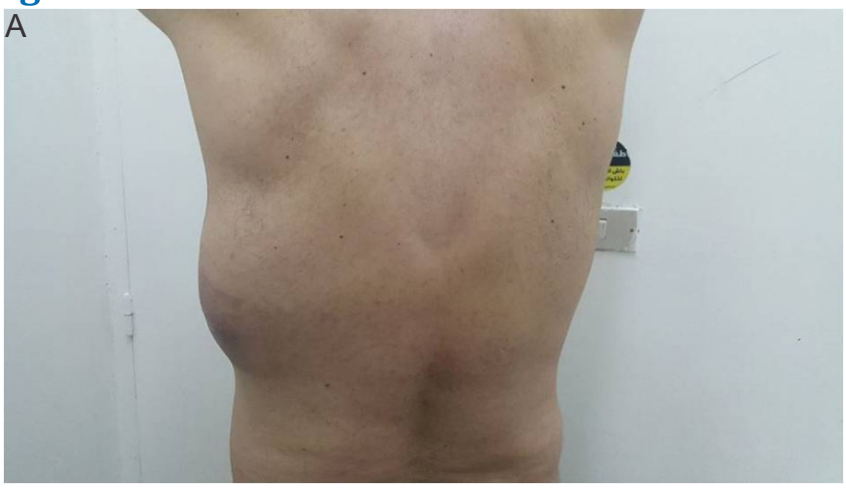



**Figure 1A+1B:** showing a 12*10 cm sized solid fixed chest lump under the left shoulder with extensive ecchymosis.

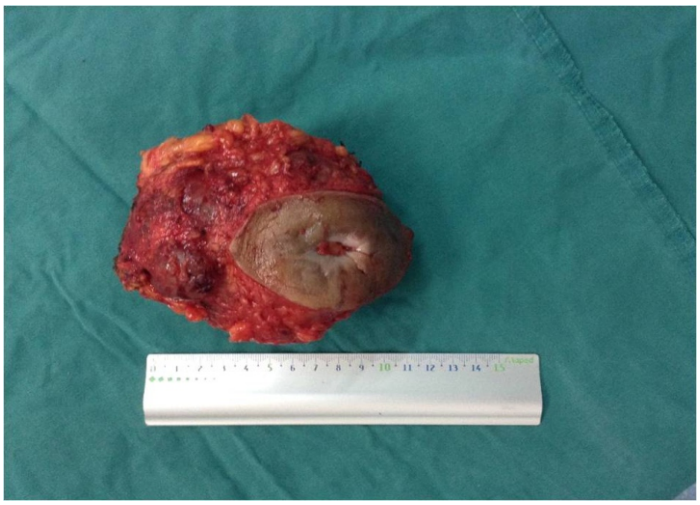

**Figure 2:** Post operative specimen showing 11*5 cm sized solid chest mass invading the 7th the 8th and the 9th rib.

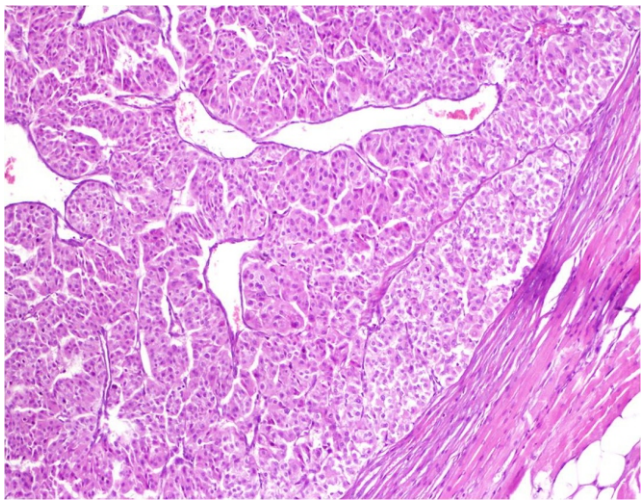

**Figure 3A:** Hematoxiciline and eosine stain *100 showing Trabecular and solid architecture

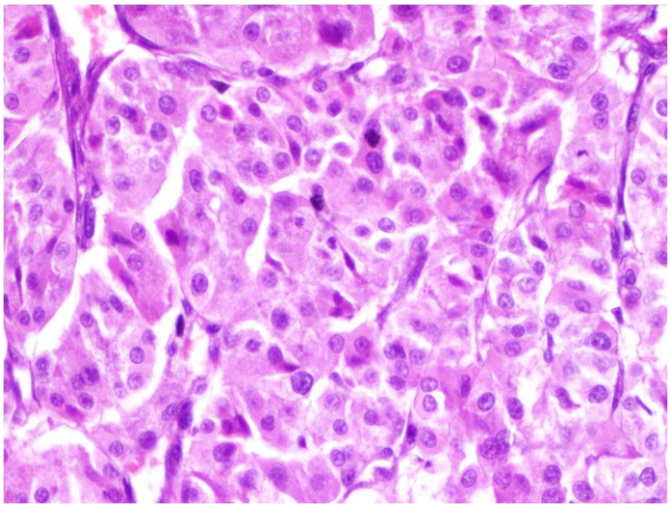

**Figure 3B:** Hematoxiciline and eosine stain *100 showing Trabecular and solid architecture

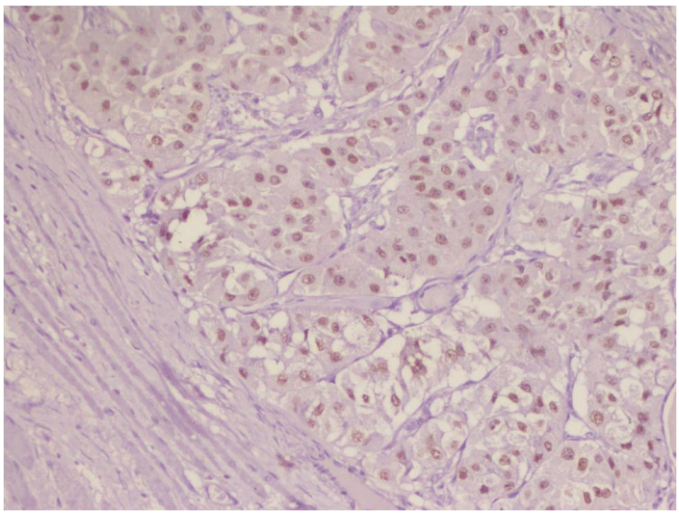

**Figure 4:** Tumor cells showing nuclear positivity for TTF1

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