Malignant Melanoma metastacizing to the Thyroid Gland: A Case Report and Review of the Literature

Brian Kung  
*Thomas Jefferson University*

Saba Aftab  
*Thomas Jefferson University*

Moira Wood  
*Thomas Jefferson University*

David Rosen  
*Thomas Jefferson University*

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**Abstract**

**Objective:** The thyroid gland is a relatively uncommon site for secondary malignancy. Even less common is metastasis of malignant melanoma to the thyroid gland. We present a case of malignant melanoma metastasizing to the thyroid gland presenting as thyroid enlargement.

**Methods:** A 68-year-old patient with no prior evidence of primary skin melanoma presented with a neck mass which tested positive for melanoma. A year and a half following modified radical neck dissection, the patient presented with a diffusely enlarged thyroid gland from which fine needle aspiration revealed malignant melanoma.

**Results:** A few months following this, the patient began having seizures and was found on MRI to have metastatic disease to the brain. He developed ventilator dependent respiratory failure and required a tracheostomy tube.

**Conclusions:** Patients with a history of malignancy and a thyroid nodule present a diagnostic dilemma—a new, primary, or distant metastasis? Review of this case and the literature strengthens the argument that any patient with a history of malignancy and a thyroid mass should be considered as having metastasis until proven otherwise.

**Introduction**

The incidence of metastases to the thyroid gland in autopsy series has been reported to range between 1.25-24%. The most common sources of metastases are renal cell carcinoma, breast carcinoma, and lung carcinoma. Clinically apparent spread of malignant melanoma to the thyroid gland is rare, accounting for less than 5% of metastatic tumors to the thyroid.

We present a case of a patient with malignant melanoma metastasizing to the thyroid gland as an early manifestation of distant metastatic disease, as well as a review of the literature.

**Case Report**

A 68-year-old male with a 30 pack year tobacco history presented with a 1.5 cm left posterior triangle neck mass. Physical exam and radiographs performed at the time failed to reveal a primary tumor. An FNA of the mass at the time revealed a poorly differentiated squamous cell carcinoma. The patient was taken to the operating room for staging endoscopy and a repeat FNA. Again, there was no evidence of a primary lesion, but FNA at this time was suggestive of melanoma, and this diagnosis was confirmed via immunophenotyping, which showed the cells staining positive for Melan-A and M 100 (Figure 1). Bicarbonate of the noma, naeopharynx and tongue base were negative. The patient then underwent a left modified radical neck dissection. The posterior triangle mass was discovered to be a lymph node which tested positive for malignant melanoma. All other nodes were negative. No primary site for the melanoma was found, and the patient was scheduled for radiation therapy and chemotherapy. However, the patient was reluctant to receive these treatments following the diagnosis.

Eighteen months later, the patient presented with a 10 cm midline neck mass representing a diffusely enlarged thyroid gland. An FNA was performed which revealed melanoma. The patient underwent an MRI of the neck, revealing a diffusely enlarged ectopic thyroid gland with no cervical adenopathy (Figure 2). Two weeks later, the patient began having seizures, and an MRI of the brain revealed a 1.7 cm mass in the region of the anterior superior vermis, with associated mass effect and mild hydrocephalus. This was suspicious for metastases. A CT scan of the chest, abdomen, and pelvis was obtained, showing a soft tissue lesion in the supraventricular region consistent with metastasis. The patient soon developed ventilator dependent respiratory failure, and was taken for a subtotal thyroidectomy for establishment of a tracheostomy (Figure 3). Histology showed the thyroid gland replaced by malignant melanoma with extensive necrosis (Figure 4). The patient subsequently required placement of a ventriculoperitoneal shunt to treat the hydrocephalus secondary to the metastatic brain lesion.

**Discussion**

The case presented above is similar to the few other case reports detailing metastatic melanoma to the thyroid gland. As with our patient, the most common complaint among patients with metastatic disease to the thyroid gland is a neck mass. Some authors have found that the pathology shows replacement of the thyroid by melanoma, but thyroid function remains preserved. Our patient had no evidence of hypothyroidism—his laboratory abnormalities (slightly decreased TSH, normal free T4) likely represent the slight variation in thyroid function tests seen in euthyroid sick syndrome. Shimaoka et al describes a likely explanation for this phenomenon—it takes weeks to months for total ablation of thyroid function to manifest as hypothyroidism, and most patients do not survive long enough with metastatic tumor for this to occur. Several authors have suggested that pre-existing abnormalities of the thyroid, such as nodules or adenomas, predispose it to metastatic lesions. Our patient did not have such abnormalities.

Various autopsy studies have revealed the incidence of malignant melanoma metastasizing to the thyroid gland to be high. Although Nakajima et al found melanomas to account for less than 5% of clinically apparent metastatic thyroid tumors, autopsy studies have shown the number to be as high as 35% of all metastatic lesions to the thyroid. The disparity can be explained by the fact that in autopsy studies, metastatic lesions are discovered only upon microscopic examination of small, careful cuts of the gland. In autopsies, studies focused only on patients with melanoma, Paul et al found the incidence of thyroid melanomas to be 28% in 261 autopsies performed. Shimaoka et al found thyroid melanomas in 39%. It is not surprising that melanoma has such a high propensity for the thyroid gland given its vasculature and the hematogenous route of spread. Melanoma has the ability to metastasize to almost every organ, with the most common sites being lungs, liver and brain. Although patients with melanoma may have thyroid metastases without consequence, it is rare that a mass in the thyroid would be their only clinically apparent metastasis. Our case is especially difficult as no primary lesion was ever found. However, given the high incidence of metastases to the thyroid gland, other metastatic deposits are identified at or soon after the discovery of the lesion. With the exception of metastases from renal cell carcinoma, Rosen et al showed patient survival less than 2 years after discovery of thyroid metastases. McCrady et al reported an average survival of 12 months. In discussing melanoma specifically, patients with metastatic melanoma have a median survival of 24 months, irrespective of site of metastasis. Le et al. showed the survival of patients with melanoma metastatic to the thyroid to be 26% in the 261 autopsies performed. Nakhjavani et al report months between detection of primary malignancy and metastases to the thyroid. Our case is especially difficult as no primary lesion was ever found. However, given the high incidence of thyroid metastases in malignancy, and given the long time period between initial neoplasm and discovery of thyroid metastases, we must agree with Nakhjavani et al that any patient with a previous history of malignancy with a thyroid mass should be considered as having metastases until proven otherwise.

**References**