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Malignant Melanoma Metastasizing To The Thyroid Gland: A Case Report And Review Of The Literature

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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 metastatic to the thyroid gland presenting as thyroid enlargement.

Study Design: This is a case report which utilizes chart review, intraoperative photographs, radiographic images, and pathology slides.

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 metastatic 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 subtotal thyroidectomy for the placement of a tracheostomy tube.

Conclusions: Patients with a history of malignancy and a thyroid nodule present a diagnostic dilemma—it is 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 tumours to the thyroid.

We present a case of a patient with malignant melanoma metastatic to the thyroid gland as an early manifestation of distant malignant 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 1.5cm 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 immunohistochemistry, which showed the cells staining positive for Melan-A and S-100.

Histology showed the thyroid largely being replaced by metastatic melanoma with extensive necrosis. S-100 stain of melanoma cells from FNA specimen, b) Melan-A stain from FNA specimen. Immunophenotyping, which showed the cells staining positive for Melan-A and S-100. 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 during follow-up.

Eighteen months later, the patient presented with a 10cm 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 cystic thyroid gland with no cervical adenopathy. Two weeks later, the patient began having seizures and an MRI of the brain revealed a 1.7cm mass in the right frontal lobe. The patient was taken to the operating room for staging endoscopy and a repeat FNA. Again, there was no evidence of primary malignancy and metastases were found, and the patient was scheduled for radiation therapy and chemotherapy. However, the patient was reluctant to receive these treatments during follow-up.

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Discussion

The case presented above is similar to the few other case reports detailing malignant melanoma to the thyroid gland. As with our patient, the most common complaint among patients with malignant 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—the laboratory abnormalities (slightly decreased TSH, normal free T4) likely represent the slight variation in thyroid function tests seen in euthyroid sick syndrome. Shimazu 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 hypothyroidism to become apparent. It has been suggested that pre-existing abnormalities of the thyroid, such as nodules or adenomas, predispose it to metastatic lesions of melanoma. 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 tumours, 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 autopsy studies focused only on patients with melanoma, Paul et al found 6% of thyroid melanomas to be 26% of the 261 autopsies performed. Shimazu et al found thyroid melanomas in 39%. It is not surprising that melanoma has such a high propensity for the thyroid 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 sign of metastatic disease. Although our patient was discovered to have additional inguinal lymph node metastases without consequence, it is rare that a mass in the thyroid would be their only clinically apparent sign of metastatic disease. Metastases to the thyroid gland are relatively common, with reported incidences as high as 9.5%. An autopsy study of 7332 patients with known malignancy showed 2.8% with thyroid metastases. These surprising numbers have prompted some to state that metastatic thyroid neoplasms may be 10 times as numerous as primary thyroid cancer. Some reports state the prevalence of patients presenting with a thyroid nodule who had a past history of malignancy, four bad cytologic evidence of metastasis. This led him to conclude, along with Shimazu et al, that a patient with a history of cancer, a metastatic thyroid nodule is more likely than a primary.

Our case allows for discussion of the diagnosis and management of thyroid metastases. FNA has been reported to be the initial procedure of choice in diagnosis of metastatic lesions to the thyroid. Once discovered, metastases to the thyroid must be managed very differently than lymphomas or primary thyroid tumors. A secondary nodule to the thyroid indicates a poor prognosis. Metastases to the thyroid gland in the 5th-6th decades of life, and these patients additively have a worse prognosis secondary to advanced age. More importantly, thyroid metastases are usually part of a widely disseminated malignancy. In most reports 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. McCab 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. However, most patients with melanoma have one single organ metastasis, and when combined with other poor prognostic indicators, surgical management of metastatic melanoma is most often limited to palliative measures. Thyroidectomy is an acceptable modality for relief from dyspnea or dysphagia, or in our patient, performing a tracheostomy. In the rare case that the thyroid is the only site of metastatic deposits, thyroidectomy can be curative.

Any patient with a history of malignancy and a thyroid nodule presents a diagnostic dilemma. Is it a benign nodule, a new primary, or a metastasis? The FNA can be very helpful in distinguishing these entities. If it represents metastatic disease, it is “a new primary suggesting a neoplasm somewhere else”, or if it is merely the growth of microscopic deposits from a much earlier neoplasm? Others have also described similar dilemmas – Ivy describes melanoma in the thyroid gland years before and years after the primary lesion is discovered. Nakajima 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 Nakajima et al that any patients with a previous history of malignancy with a thyroid mass should be considered as having metastases until proven otherwise.

References