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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 studies.

Methods: A 68-year-old male 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 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 establishment of a tracheostomy tube.

Conclusions: Patients with a history of malignancy and a thyroid node present a diagnostic dilemma—i.e., a benign, a new primary, or a 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 metastatic 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 repair 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 S-100.

Figure 1: a) S-100 stain of melanoma cells from FNA specimen, b) Melan A stain from FNA specimen

Figure 2: a) Axial TIW MRI showing enlarged thyroid gland, b) Coronal T2W MRI showing similar findings.

Histology showed the thyroid gland had been replaced by malignant melanoma with extensive necrosis (Figure 3). The patient subsequently required placement of a tracheostomy tube for respiratory failure.

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—the 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 describe 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. 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 Nakhjavani 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 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 the incidence of thyroid metastases to be 26% in 261 autopsies performed. Shimaoka et al found thyroid metastases in 39% of patients. It is not surprising that melanoma has such a high propensity for the thyroid given its vascularity 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 melanoma. Although our patient was determined to have additional inguinal lymph node and brain metastases during his hospital course, it was his enlarged thyroid gland that was the early indication of distant metastases.

Metastases of any malignancies to the thyroid are much more common than one would expect. The incidence of metastases to the thyroid gland is fairly high in patients with known metastatic tumors. One autopsy study of 7332 patients with known malignancy revealed 28% with thyroid metastases. Others have reported incidences as high as 93%. Combining studies, a representative figure is 5-6%. These surprising numbers have prompted some to state that metastatic thyroid neoplasms may be 10 times as numerous as primary thyroid cancers. Some reports state that 6% of patients presenting with a thyroid nodule had a past history of malignancy, four bad coincidental evidence of metastases. This led him to conclude, along with Shimaoka et al, that in 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 neoplasm to the thyroid indicates a poor prognosis. Metastases to the lymph nodes in the neck predispose to the thyroid gland in 46%, and these patients additionally 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 lesions are identified at or soon after the discovery of the lesion. With the exception of metastases from renal cell carcinoma, Rosen et al showed 70% of patients survived less than 2 years after discovery of thyroid metastases. McCaig 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 melanoma. Less than 1% of melanoma patients have single organ metastases, and when combined with other poor prognostic indicators, surgical management of metastatic melanoma is most often limited to palliative measures. Thyroidectomy is an accepted procedure for relief of dyspnea or dysphagia, or as in our patient, performing a tracheostomy. In the rare case that the thyroid is the only site of metastatic deposits, thyroidecomy 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 reports a primary thyroid lesion, it is “a” new primary. If it reports a metastasis, it is “a” new metastasis. If it reports a lymph node, it is “a” new lymph node. In more cases, it is a new metastasis to the thyroid gland.

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References