Metastatic Melanoma to Thyroid: A Case Report and Institutional Review


Department of Surgery, Massachusetts General Hospital, Boston, USA
Department of Pathology, Massachusetts General Hospital, Boston, USA

Correspondence: Carrie C Lubitz, Massachusetts General Hospital, 15 Parkman Street, WACC 460, Boston, USA
Phone: 617-724-2570, Fax: 617-724-2574, e-mail: clubitz@partners.org

Abstract
Objective: To report a case of melanoma metastatic to the thyroid gland and to review our experience with secondary neoplasms of the thyroid.

Methods: We depict the presentation and treatment of the patient, illustrating pathologic and radiologic findings. All patients with pathologic confirmation of metastatic tumors of the thyroid undergoing thyroidectomy at the Massachusetts General Hospital were reviewed (1995-2008).

Results: A 59-year-old male presented with malignant melanoma of the scalp. Two months following his melanoma excision and lymphadenectomy, he underwent a hemi-thyroidectomy for fine-needle aspirate positive solitary metastasis. He initially did well, but on follow-up was noted to have diffuse metastases and expired from his disease eight months following initial diagnosis. Institutional review revealed 13 additional patients with pathologically confirmed secondary thyroid tumors.

Conclusions: FNA remains an indispensable diagnostic tool. Palliation from local compressive symptoms is an indication for surgery and long-term survival is seen in some patients undergoing resection of isolated metastases.

Keywords: Thyroid cancer, secondary tumors, metastatic melanoma, metastatic renal cell carcinoma, FNA.

INTRODUCTION
Secondary malignancies of the thyroid are rare. Autopsy series report an incidence of secondary thyroid malignancies in 0.5 to 1.8% of unselected autopsies and up to 2.8% of glands studied in cancer patients. Screening ultrasound as well as surveillance CT and 18FDG-PET for established cancer patients has lead to the increased detection of incidental secondary neoplasms of the thyroid. These lesions frequently harbor malignancy. Treatment of metastatic lesions to the thyroid is not well-established. In this paper, we describe a case report of a rare patient with melanoma metastatic to the thyroid and review our institution’s experience with secondary lesions of the thyroid.

CASE REPORT
The patient is a 59-year-old male who in February 2005 was noted to have a suspicious mole on his left occiput. A shave biopsy was consistent with a superficial spreading melanoma, with a Breslow depth of 0.85 mm and Clark’s level IV; no ulceration or lymphovascular invasion was found. The patient was noted to have a palpable lymph node in the left occipital region; an FNA was consistent with metastatic melanoma. Metastatic work-up with a brain MRI and an abdominopelvic CT scan were negative. A chest CT showed a 2.1 cm hypodense nodule consistent with a solitary 18FDG-PET avid region arising from the left lobe of the thyroid gland (Fig. 1). He underwent a wide excision of the scalp melanoma and a modified radical left neck dissection. Pathology revealed negative margins, with residual malignant melanoma and one of ten lymph nodes positive for metastatic melanoma. Systemic induction interferon therapy was initiated and he was referred to an endocrine surgeon for further evaluation of the thyroid nodule.

The patient denied local symptoms, history of thyroid disease or radiation exposure, and family history of thyroid cancer. On physical exam, he was noted to have a firm and mobile nodule at the lower pole of the left thyroid lobe. A thyroid ultrasound demonstrated a solitary 2.5 × 1.6 × 1.4 cm solid, hypoechoic nodule at the left lower pole of the thyroid (Fig. 2) and no cervical adenopathy was noted. A
fine needle aspiration (FNA) was performed confirming metastatic melanoma consistent with the known scalp primary. He underwent a left hemi-thyroidectomy and left central lymph node dissection. At exploration, there was a focal 2.5 cm nodule at the left lower pole that was readily mobilized from the surrounding tissues. The final pathology revealed metastatic melanoma within a follicular adenoma with Hürthle cell features and two negative perithyroidal lymph nodes (Figs 3A to F).

He initially did well following his thyroidectomy, but on routine follow-up was noted to have diffuse metastases including liver metastases on CT and numerous osteolytic bone lesions on bone scan. Maintenance interferon therapy was not tolerated and the disease progressed. Palliative...
radiotherapy was started. The patient expired from his
disease eight months following the initial diagnosis.

INSTITUTIONAL REVIEW

All patients with pathologic confirmation of metastatic
tumors of the thyroid undergoing thyroidectomy at the
Massachusetts General Hospital were studied with
Patients with direct extension from local tumors were
excluded. Patient age, gender, presentation, time from
diagnosis of primary tumor, treatment, and outcome are
retrospectively reviewed.

Fourteen patients had pathologically confirmed
secondary tumors metastatic to the thyroid gland: five renal
cell carcinomas (RCC), two melanomas, two colorectal
adenocarcinomas, two nonsmall cell carcinomas of the lung,
one breast adenocarcinoma, one fibrosarcoma, and one
adenoid-cystic carcinoma. This cohort included six women
and seven men with an average age of 64 (SD ± 12) years.
Ten out of the 14 patients presented with local symptoms
including seven with compressive symptoms, one with
dysphagia, one with hoarseness, and one with dyspnea.

Four incidental thyroid nodules were noted on
surveillance imaging for the patient’s primary malignancy,
two on chest CT for two of the RCC patients, and 18FDG-
PET for the others (Fig. 1). Twelve of the 14 patients
underwent FNA of the suspicious nodules. Seven of 12 were
accurate in identifying the specific primary. Of the other
five, one patient underwent three nondiagnostic FNAs prior
to surgical confirmation of metastasis, two were false-
negatives, and two were suspicious for malignancy. Seven
patients had isolated metastases. Two of the four RCC
patients with follow-up are alive with no evidence of disease,
and the others lived greater than four years following the
diagnosis of thyroid metastasis. Patient demographics, tumor
type, presentation, and treatment are illustrated in Table 1.

DISCUSSION

Secondary malignancies account for 1.4 to 7.5% of all
thyroid malignancies and up to 24% of autopsy specimens.
RCC is the most common primary followed by lung, breast,
and melanoma. Wychulis et al who reported 14 cases of
biopsy proven secondary malignancy of the thyroid at the
Mayo Clinic from 1907 to 1962. They found a similar
distribution of primary tumors including eight RCC, four
breast adenocarcinomas, one rectal adenocarcinoma, and
one transitional cell carcinoma. A follow-up series reported
43 cases over a ten-year period. Consistent with other
reports, the cancer with the highest frequency of thyroid
metastases was RCC. In 6/43, the thyroid was the initial
site of metastasis. In their series, the mean survival of
patients who were treated with thyroidectomy (23/43) was

Table 1: Patient demographics, presentation of metastases, and outcomes: Tumor subtype, patient age and gender, extent of surgery,
presence of symptoms and other metastases, time from diagnosis of primary tumor, and outcome at last known follow-up

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Age/ Gender</th>
<th>Treatment</th>
<th>Symptoms</th>
<th>Isolated thyroid metastasis</th>
<th>Time from primary diagnosis</th>
<th>Length of follow-up/outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renal cell carcinoma</td>
<td>62M</td>
<td>Left hemi-thyroidectomy</td>
<td>No</td>
<td>No</td>
<td>5 years</td>
<td>5 years, alive with disease</td>
</tr>
<tr>
<td>Renal cell carcinoma</td>
<td>58M</td>
<td>Total thyroidectomy</td>
<td>Yes</td>
<td>No</td>
<td>6 years</td>
<td>6 years, alive with NED</td>
</tr>
<tr>
<td>Renal cell carcinoma</td>
<td>79M</td>
<td>Total thyroidectomy</td>
<td>Yes</td>
<td>Yes</td>
<td>14 years</td>
<td>5 years, alive with NED</td>
</tr>
<tr>
<td>Renal cell carcinoma</td>
<td>52F</td>
<td>Right hemi-thyroidectomy</td>
<td>No</td>
<td>No</td>
<td>7 years</td>
<td>4 years, expired</td>
</tr>
<tr>
<td>Renal cell carcinoma</td>
<td>72F</td>
<td>Total thyroidectomy</td>
<td>Yes</td>
<td>Yes</td>
<td>3 years</td>
<td>Unknown</td>
</tr>
<tr>
<td>Melanoma</td>
<td>70M</td>
<td>Total thyroidectomy</td>
<td>Yes</td>
<td>Yes</td>
<td>2 months</td>
<td>1 year, expired</td>
</tr>
<tr>
<td>Melanoma</td>
<td>60M</td>
<td>Left hemi-thyroidectomy, CLND</td>
<td>No</td>
<td>Yes</td>
<td>2 months</td>
<td>8 months, expired</td>
</tr>
<tr>
<td>Nonsmall cell</td>
<td>82M</td>
<td>Total thyroidectomy + tracheal resection</td>
<td>Yes</td>
<td>No</td>
<td>Simultaneous</td>
<td>Unknown</td>
</tr>
<tr>
<td>Nonsmall cell</td>
<td>62F</td>
<td>Total thyroidectomy + CLND</td>
<td>No</td>
<td>No (+LN)</td>
<td>2.5 years</td>
<td>1 year, alive with disease</td>
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<td>Rectal adenocarcinoma</td>
<td>47M</td>
<td>Partial thyroidectomy</td>
<td>Yes</td>
<td>Yes</td>
<td>Simultaneous</td>
<td>3 years, expired</td>
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<td>Colon adenocarcinoma</td>
<td>65F</td>
<td>Subtotal thyroidectomy</td>
<td>Yes</td>
<td>Yes</td>
<td>3 years</td>
<td>Unknown</td>
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<td>Breast adenocarcinoma</td>
<td>82F</td>
<td>Total thyroidectomy + CLND</td>
<td>Yes</td>
<td>No</td>
<td>39 years</td>
<td>1 month, expired</td>
</tr>
<tr>
<td>Fibrosarcoma of esophagus</td>
<td>45F</td>
<td>Total thyroidectomy</td>
<td>Yes</td>
<td>No</td>
<td>2.5 years</td>
<td>Unknown</td>
</tr>
<tr>
<td>Adenoid cystic carcinoma</td>
<td>52F</td>
<td>Right hemi-thyroidectomy CLND</td>
<td>Yes</td>
<td>Yes</td>
<td>Simultaneous</td>
<td>1 year, alive</td>
</tr>
</tbody>
</table>

Abbreviations: CLND—central lymph node dissection of neck, Level VI. NED—no evidence of disease.
34 months compared with 25 months for those treated with chemotherapy or radiation alone (20/43). Ten patients who underwent thyroidectomy were identified in an eight-year review of clinically significant isolated metastatic disease to the thyroid gland at Johns Hopkins. Mean time from resection of primary to thyroid metastases was 3.5 years. At a median of five years, six patients were alive and two with no evidence of disease. Others have reported improved survival with resection of metastatic RCC.

CONCLUSION

FNA remains a valuable tool for the diagnosis of secondary malignancies of the thyroid. RCC was the most common primary malignancy and these patients appear to portend the best prognosis. Palliation from locally compressive symptoms is a reasonable indication for surgery and can be performed with low morbidity. Our series and others have shown examples of long-term survival in patients undergoing resection of isolated metastases.

REFERENCES