

CASE REPORT

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Colonic carcinoma with widespread mets and double pathology in thyroid including mets and papillary thyroid carcinoma (PTC)

Yan Joyce Ming, Francesco Amico, Mark Formby, Cino Bendinelli

ABSTRACT

Introduction: This is a report of an ileocecal adenocarcinoma metastasizing to a follicular papillary thyroid carcinoma (PTC), describing the 7th reported case of primary colorectal carcinoma metastasizing to thyroid carcinomas.

Case Report: A 64-year-old woman was found to have a T4bN2bM0 ACP stage C high-grade invasive ileocecal adenocarcinoma. Subsequent metastases to the left hemithyroid, liver segment 8 and bilateral lungs were found. Histopathology from left hemithyroidectomy revealed a partly necrotic colorectal adenocarcinoma adjacent to a separate PTC lesion.

Conclusion: Adopting a standardized approach to describing the microscopic findings would enhance reporting of these occurrences and improve management and follow-up for patients.

Keywords: Collision tumor, Metastatic colorectal carcinoma, Papillary thyroid carcinoma

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INTRODUCTION

This is a report of an ileocecal adenocarcinoma metastasizing to a follicular papillary thyroid carcinoma (PTC). Primary colorectal metastases to thyroid carcinomas are extremely rare. This work aims to describe the 7th ever reported case and to highlight the inhomogeneous reporting on this topic.

CASE REPORT

An ileocecal adenocarcinoma was endoscopically diagnosed in a 64-year-old woman. Preoperative computed tomography (CT) and positron emission tomography (PET) two months postoperatively were negative for distant lesions and right hemicolectomy allowed staging of this malignancy as a T4bN2bM0 ACP stage C high-grade invasive ileocecal adenocarcinoma. A year later a metastasis was found in segment 8 of the liver and treated with neoadjuvant chemotherapy and partial hepatectomy. Subsequently, a 6 and a 7 mm lesion were found in the lungs bilaterally on PET-CT with SUV 0.94 and 0.97. These were initially managed with surveillance but then required bilateral resection 4 years after initial diagnosis when surveillance PET-CT

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established SUV of 2.0 and 1.7. Another hepatic lesion was simultaneously found and resected from segment 6, and a suspect metastasis was found on surveillance PET-CT and biopsied in the left thyroid. A malignant lesion in the thyroid gland was characterized by CDX2 and TTF1 positive immunostaining and a left hemithyroidectomy was performed. Histopathology showed a partly necrotic metastatic colorectal adenocarcinoma measuring 35×20×10 mm adjacent to a separate 3.5 mm lesion identified as PTC, follicular variant. While the metastatic adenocarcinoma was focally extending into the extra thyroidal soft tissue and blending with diathermy artifact at the peripheral surgical margin, the PTC appeared to be histologically confined to the thyroid. Immunohistochemistry staining further demonstrated CDX2 positive and KRAS gene mutation for the metastatic colorectal adenocarcinoma segment and TTF-1 positive and BRAF gene mutation for the PTC (Figure 1).

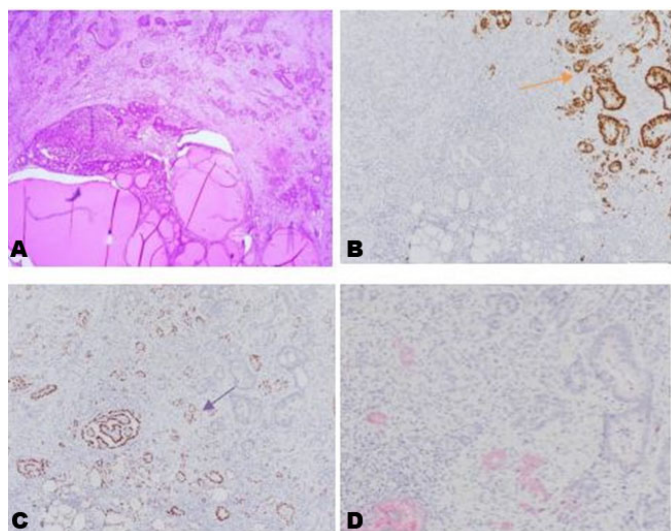


Figure 1: (A) Primary follicular variant papillary thyroid carcinoma with metastatic adenocarcinoma. (B) Tumour cells positive for CDX-2 staining (green arrow), (C) Same slide of cells showing tumor cells positive for TTF-1 staining (yellow arrow), (D) BRAF mutation staining.

DISCUSSION

Six cases of primary colorectal carcinoma metastasizing to thyroid carcinomas were identified in the scientific literature (Table 1). Metastatic colorectal cancer is common, primarily to regional lymph nodes, liver and lungs [1]. However, metastases to the thyroid gland are uncommon. Autopsy series have shown a prevalence of 1.9–24% [2]. The most common primary sites are renal cell, colorectal, lung, and breast. However, colorectal adenocarcinoma metastasizing to the thyroid gland with an adjacent primary thyroid neoplasm is extremely rare. Some authors have postulated that cancer changes the cellular structures in the thyroid gland, predisposing it as a site of metastasis [1–5]. The most commonly involved thyroid carcinoma is PTC, with 1 follicular variant PTC, and 1 medullary carcinoma (Table 1). Colorectal adenocarcinoma is the most common metastasis to be found within thyroid cancers, followed by renal cell carcinoma and lung adenocarcinoma.

The cases reported in Table 1 were described as tumor-to-tumor metastases, collision tumors, or tumors found on the same anatomical site not further categorized by the authors. While most of these cases’ histopathology was described as having an abrupt transition between the two groups of cancer cells—including those classified as collision tumors and tumor-to-tumor metastasis—some cases reported inter-tumor distribution.

Our patient had metastatic deposits in liver, lung, thyroid, and lymph nodes, but the only site with two distinct groups of cancerous cells was the thyroid gland.

CONCLUSION

Primary colorectal metastases to thyroid carcinomas are rare, and involve invasive oncological processes with patients having multiple sites of metastases. Adopting a standardized approach to describing the microscopic findings would enhance reporting of these occurrences and improve management and follow-up for patients.

Table 1: Published case reports of colorectal carcinoma metastasizing to thyroid carcinoma

Author	Age	Sex	Primary malignancy	Thyroid cancer	Max diameter colorectal mets (mm)	Max diameter of thyroid carcinoma (mm)	Histologic interaction	Colorectal cancer staging	Other mets
Cherk et al. (2008) [1]	52	M	Colon adenoca.	PTC	32	N/A	Intermixed	T3 N1 M1	Nil
Starker et al. (2011) [2]	66	M	Colon adenoca.	PTC	N/A	N/A	Clear delineation	T4 No M1	Liver
Yeo et al. (2014) [6]	53	M	Colon adenoca.	Medullary thyroid carcinoma	80 mm	N/A	Separate	N/A	Lung

Table 1: (Continued)

Author	Age	Sex	Primary malignancy	Thyroid cancer	Max diameter colorectal mets (mm)	Max diameter of thyroid carcinoma (mm)	Histologic interaction	Colorectal cancer staging	Other mets
Amenduni et al. (2014) [3]	63	F	Colorectal adenoca.	Follicular variant PTC	N/A	2	Separate	N/A	Nil
Jin et al. (2014) [4]	62	F	Rectal adenoca.	PTC	N/A	N/A	N/A	N/A	Nil
Luo et al. (2020) [5]	34	F	Rectal adenoca.	PTC	23x	5	N/A	T4 N1 M1	Lung

Abbreviations: Adenoca.: adenocarcinoma; PTC: Papillary thyroid carcinoma; N/A: not available.

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Author Contributions

Yan Joyce Ming – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Francesco Amico – Conception of the work, Design of the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Mark Formby – Analysis of data, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Cino Bendinelli – Conception of the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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