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Neoplasms metastatic to the thyroid gland

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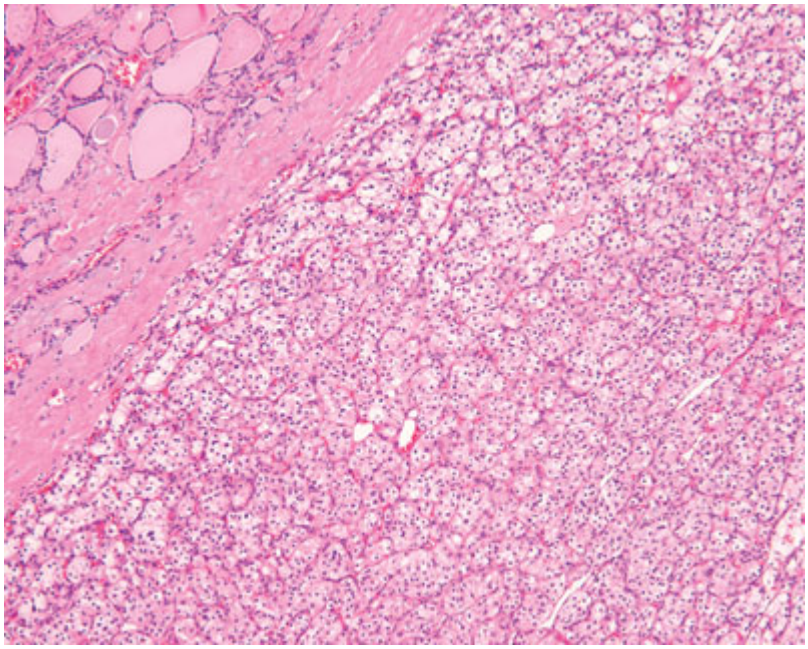

Figure 1. Low-power view shows an encapsulated nodule of metastatic renal cell carcinoma in the thyroid gland. Note the uninvolved thyroid follicles in the upper left.

Tumors that occur in the thyroid gland as a result of lymph or vascular spread from distant sites are considered to represent metastatic disease rather than a direct extension of a primary from an adjacent organ. Metastatic deposits are identified at a higher frequency in abnormal glands—that is, those with adenomatoid nodules, thyroiditis, and follicular neoplasms. Further, metastatic deposits may be found within primary thyroid tumors, such as a renal cell carcinoma metastatic to a thyroid papillary carcinoma. Although a thyroid gland mass may be the presenting clinical sign, it is more often the underlying thyroid gland disease (e.g., thyroiditis, adenomatoid nodules) that prompts clinical evaluation. The thyroid gland metastatic deposit is the initial presentation of an occult primary tumor in as many as 40% of patients. Carcinomas are the most common metastatic tumors from (in order of frequency) the kidney (figure 1), lung, breast (figure 2), and stomach; melanoma is less common.

Multifocal and bilateral disease is common, although some single masses are seen. The highly vascularized thyroid gland is quite susceptible to metastatic deposits. The metastatic deposits morphologically and architecturally resemble the primary site, yielding a distinctly different histologic appearance from thyroid gland primaries. However, clear-cell carcinomas (e.g., renal cell carcinoma) and small-cell carcinomas (e.g., neuroendocrine carcinoma) may resemble a primary thyroid gland tumor. In such a setting, immunohistochemistry analysis will help with the separation between primary and metastatic tumors; primary thyroid follicular tumors will usually be immunoreactive with thyroglobulin, CK7, and TTF-1, while C-cell–derived tumors will be reactive to calcitonin and chromogranin. With incredibly rare exception, metastatic tumors will not be thyroglobulin-reactive.

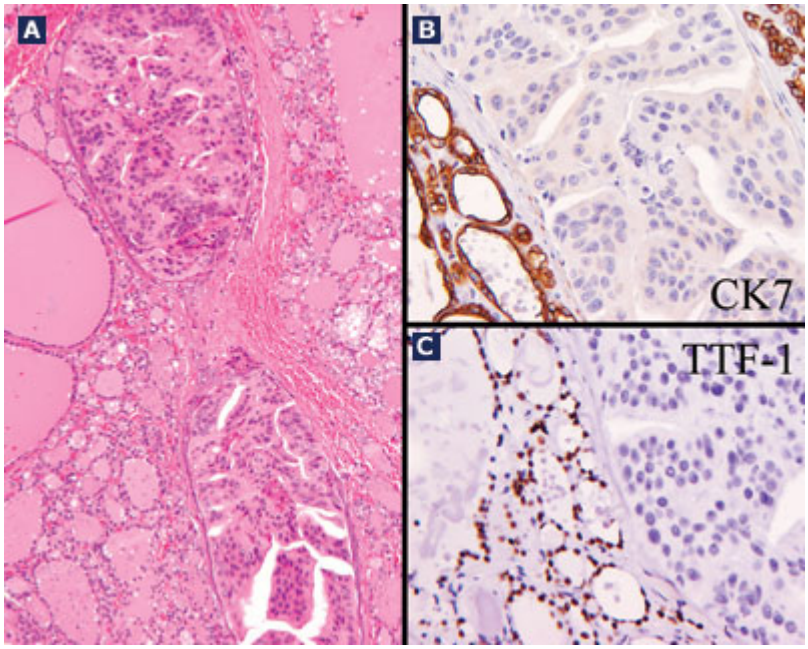

Figure 2. ***A:*** *Vessels are expanded by a metastatic adenocarcinoma from a breast primary; the architecture and nuclei are unlike the adenomatoid nodules in the background (**A**). CK7 (**B**) and TTF-1 (**C**) highlight the thyroid parenchyma but not the metastatic breast carcinoma.*

The prognosis of a patient with a tumor metastatic to the thyroid is determined by the underlying primary, but in most cases it is poor. However, if metastatic disease is limited to the thyroid gland, surgery can prolong survival.

Suggested reading

DeLellis R. Secondary tumours of the thyroid. In: DeLellis RA, Lloyd R, Heitz PU, Eng C, eds. Pathology and Genetics of Tumours of the Endocrine Organs and Paraganglia. Kleihues P, Sobin LH, series eds. World Health Organization Classification of Tumours. Lyon, France: IARC Press, 2004:122-3.