

Papillary Thyroid Carcinoma with an Uncommon Spread of Hematogenous Metastases to the Choroid and the Skin

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Papillary carcinoma is the most common malignancy of the thyroid gland with initial lymphogenic metastatic spread in many cases. Hematogenous spread may affect the lung, bone and brain. We present a case of hematogenous metastases of papillary thyroid carcinoma both in the choroid and the skin, which are reported in the literature to be rare sites of metastases in primary differentiated thyroid carcinoma. This finding is even more remarkable, as the reported patient presented without any other disseminated hematogenous metastases at the time of diagnosis of both of these metastases. With this background, papillary carcinoma of the thyroid should be considered in the differential diagnosis of choroidal or skin metastasis of unknown origin.

Key words: ophthalmic ■ metastasis ■ dermatology ■ thyroid ■ cancer

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INTRODUCTION

The most common types of thyroid neoplasms in the United States are papillary (70%), follicular (15%), anaplastic (5%) and medullary (3%) cancer. Predominantly metastases of papillary thyroid carcinoma may be found in the regional lymph nodes (42%).¹ Hematogenous spread has been reported in only 14% of cases of papillary thyroid carcinoma, mainly in the lung, followed by bone and brain. Other rather unusual sites are the liver, kidneys and adrenal glands.² Ocular metastases secondary to thyroid carcinoma are extremely uncommon and usually spread to the orbit rather than to the globe.³ Ferry and associates reported one case in a cohort of 227 cases of uveal metastasis secondary to papillary thyroid carcinoma.^{4,5} In 420 cases of uveal metastasis, Shields and associates found two patients

with primary papillary thyroid carcinoma.⁶ A literature review by Singh and associates revealed 14 reported thyroid carcinomas metastasizing to the eye, with primary papillary thyroid carcinoma reported only twice before.⁴ Skin metastases of papillary carcinoma have been reported previously in six cases of whom five patients suffered from solitary skin metastasis and one patient from multiple sites of skin metastases.⁷ Koller and associates reported a case of a growing metastatic scalp lesion in a patient with histologically proven papillary and follicular thyroid carcinoma.⁸ Reported incidence for both of the described unusual sites of thyroid metastases has been higher in patients suffering from follicular carcinoma than for those with papillary thyroid carcinoma. We describe a female patient with choroidal and skin metastases of a papillary thyroid carcinoma.

CASE REPORT

Diagnosis of primary thyroid carcinoma was made in a 57-year-old female patient. Histology revealed a papillary thyroid carcinoma (pTNM-stage pT4 Nx Mx) with small-vessel invasion. After right-sided hemi-thyroidectomy and left-sided palliative partially tumor resection due to extensive tumor invasion of the thyroid capsule and the trachea, a total of six radioiodine therapies with 131-iodine were performed over a time period of 31 months. At the time of the first radioiodine therapy, lymphogenic mediastinal metastases had been shown by radioiodine scan. There was no evidence of a hematogenous spread of the thyroid carcinoma at this time. However, the radioiodine scan and computed tomography of the thorax was suspicious of one metastasis in the left upper lung. Four months after primary resection of the thyroid, the patient underwent resection of the mediastinal lymphogenic metastases. Further resection of primary tumor tissue on the left side could not be carried out due to extensive scar tissue. Twenty months after primary diagnosis, a bronchoscopy with bouginage and laser therapy of a tracheal stenosis was performed. Histology showed parts of the known papillary thyroid carcinoma. Twenty-two months after primary diagnosis, an external radiotherapy of the cervical and mediastinal

regions was performed over a time period of eight weeks (50 Gy). A thoracotomy with resection of the left upper lobe of the lung and an extensive lymph node resection were performed 40 months after primary diagnosis of the thyroid carcinoma. Histology identified tissue of the known papillary thyroid carcinoma. A final radioiodine therapy with 131-iodine after pretreatment with isotretinoin for redifferentiation of thyroid carcinoma tissue was carried out 43 months after first diagnosis of thyroid carcinoma. Shortly after this final 131-iodine therapy, the patient sought for ophthalmologic evaluation due to an altered color vision and a reduced visual acuity on the right eye. Indirect ophthalmoscopy revealed a

yellowish prominent tumor at the posterior pole. Optical coherence tomography demonstrated a retinal pigment epithelial detachment and an overlying unremarkable neuroretina with only a shallow serous retinal detachment, confirming the choroidal origin of the tumor. On ultrasonography, the tumor displayed a high inner reflectivity with a prominence of 4.06 mm and a greatest linear dimension of 8.25 mm (Figure 1). Fluorescein angiography showed early irregular dye accumulation in the choroid and freckled late hyperfluorescence of the whole lesion (Figure 2). Nuclear magnetic resonance of the brain showed a mass craniolateral at the posterior side of the right globe (Figure 3). There was no evidence

Figure 1. B-scan ultrasonography

B-Scan ultrasonography shows a high inner reflectivity and quite defined borders of the tumor with a tiny serous retinal detachment. There is no choroidal excavation, and the sclera behind the lesion is unaffected.

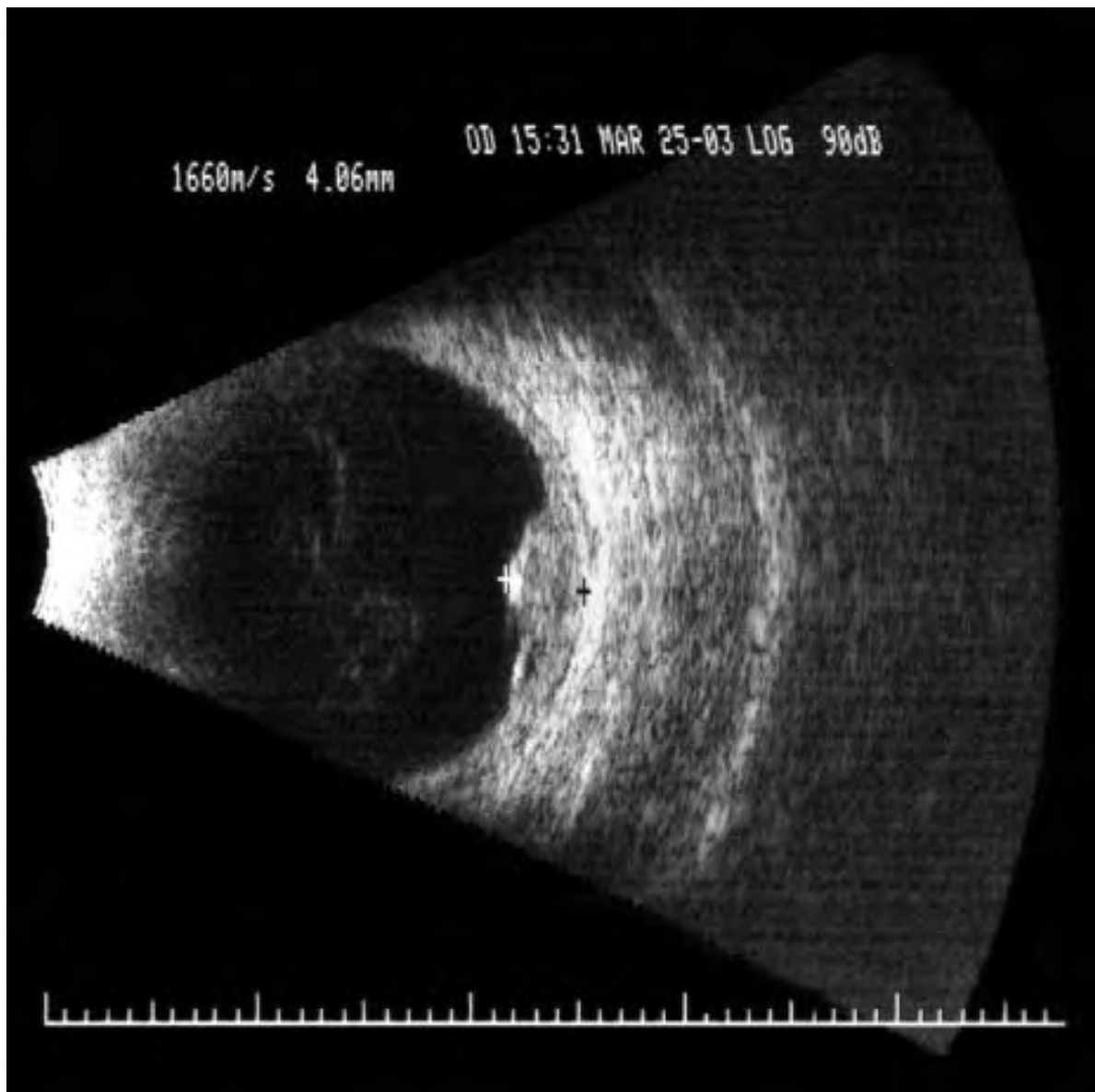
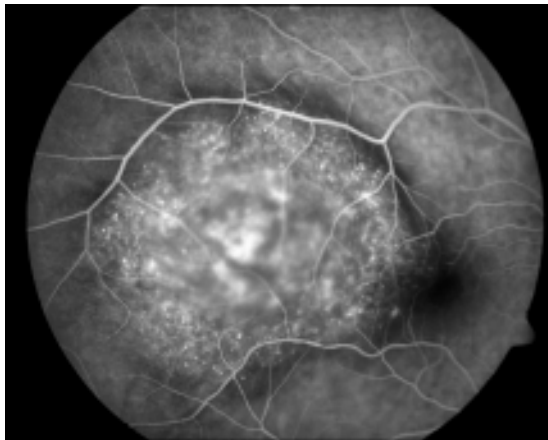


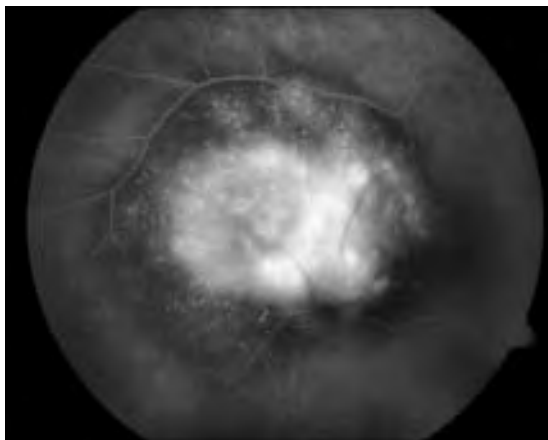
Figure 2. Fluorescein angiogram

The lesion displays irregular early hyperfluorescence in the central part of the tumor without a "double circulation." Twenty minutes after dye injections, a freckled hyperfluorescence of the whole lesion with minimal leakage can be seen.

A. Early phase



B. Late phase



of brain metastases. For further evaluation, vitrectomy and transretinal tumor biopsy were performed. Histology revealed a metastasis of the primary papillary thyroid carcinoma. Furthermore, two skin metastases of the left proximal thigh and the left thorax, respectively, were resected. An external radiotherapy of the right globe was performed within a time period of one month (40 Gy). At this time point, first diagnosis of a dissemination of metastases in both lungs, even after resection of the singular metastasis in the left upper lobe of the lung, was made. Additionally, multiple lymph node metastases as well as a malignant pleural effusion were diagnosed. The patient died 56 months after primary diagnosis of the papillary thyroid carcinoma.

Figure 3. T2-weighted sequences

T2-weighted sequences showing a contrast-medium-rich tumor mass at the cranio-lateral posterior side of the right globe (arrow)



DISCUSSION

Distant hematogenous metastases from papillary thyroid carcinoma usually affect the lungs, followed by bone and brain. Other unusual sites are the liver, kidneys and adrenal glands. Choroidal metastases commonly affect patients with disseminated malignancy, but the primary tumors are carcinomas of the breast, lungs colorectal region and urinary bladder.⁹ As mentioned before, distant metastases of the choroid in patients with thyroid carcinoma are rare. Additionally, distant metastases of the skin due to primary thyroid carcinoma are also very uncommon. Furthermore, both sites of metastatic spread are even more common in patients suffering from follicular or medullary carcinoma of the thyroid as compared to those with papillary carcinoma.⁴ Both carcinomas are equally likely to spread to the regional lymph nodes or adjacent blood vessels, a finding most likely explaining the higher frequency of both of these carcinomas reported as the primary sites of choroidal or skin metastases compared to papillary carcinomas.⁴ We report a case of a patient suffering from papillary thyroid carcinoma with initially diagnosed lymphogenic metastatic spread in the mediastinum without any evidence of hematogenic spread. This was not unexpected, as it is well known that papillary carcinomas, with an indolent course in most cases, mainly metastasize to the regional lymph nodes, whereas, as mentioned above, follicular carcinomas usually spread via hematogeneous routes.^{1,4} However, at the time of diagnosis and first operation of the primary papillary carcinoma, histology revealed tumor invasion of small vessels. At that time, a metastasis in the left upper lung, histologically confirmed after surgical resection later on, was found. However, no further hematogenic metastases were found after initial diagnosis of papillary carci-

noma with the exception of both the choroid and the two skin metastases in the later course of the disease. This is remarkable, as these sites of metastatic spread are very uncommon as solitary metastases in cases without disseminated spread of malignancy. Evidence of disseminated metastatic spread to the lung was confirmed only several weeks after diagnosis of these atypically located metastases. To our knowledge, this is the first report of both choroid and skin metastases of papillary thyroid carcinoma. It is important to note that papillary carcinomas, as the most common malignancy of the thyroid, are able to metastasize to the choroid and/or to the skin even before extensive hematogenous metastases occur. As such, papillary carcinoma of the thyroid should be considered in the differential diagnosis of choroidal or skin metastases of unknown origin.

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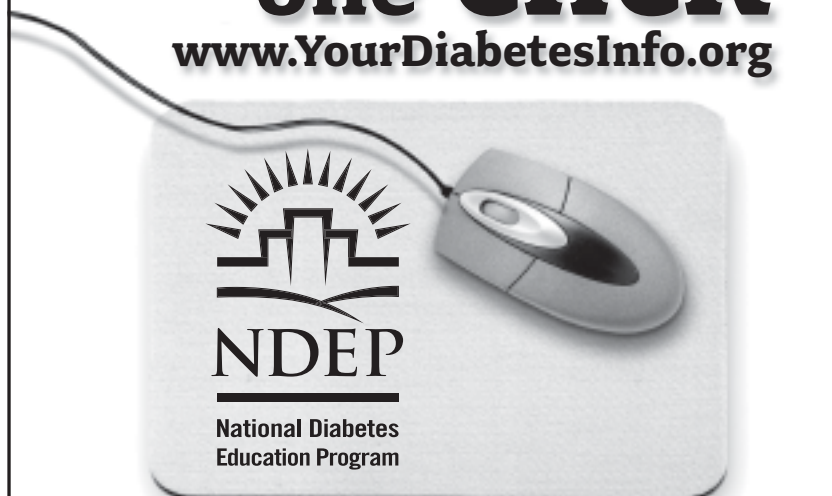
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