

CASE STUDY

PAPILLARY CARCINOMA, A METASTASIS OF THE BRAIN AND BONE: A RARE CASE

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ABSTRACT

Cerebral metastases from papillary carcinoma of the thyroid are a very uncommon condition. These metastases almost always involve concomitant lung or bone metastases which may be the first metastatic sites. In a 59-year-old woman found metastases of papillary thyroid cancer (PTC) in the frontal sinus, scapula, multiple bones of the skeleton and lungs. Evaluation confirmed that it is multiple metastases from PTC. This is a very rare presentation with such a large size of metastasis. We present this rare clinical case of massive distal lesions in PTC.

KEY WORDS: Papillary thyroid carcinoma, radioactive iodine, distant thyroid metastases

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INTRODUCTION

Papillary thyroid carcinoma (PTC) is the most common form of thyroid malignancy, generally carries a good prognosis since it usually remains intrathyroidal and tends to metastasize locally to regional lymph nodes alone (1–2). Cerebral metastases from PTC are very rare, with a frequency of 0.4–1.2% of the overall patient population (3–4). We report a 59-year-old woman with massive cerebral and bone metastases from papillary thyroid cancer.

CASE REPORT

A 59-year-old woman had a solid mass located in the left frontal region of the brain 3D computed tomography enlivened a large solid mass with high vascularization. The patient underwent surgery during which the tumor was successfully removed. Histological examination revealed adenocarcinoma to another. In the postoperative period the patient received a distance course of gamma therapy. After repeated pathological studies a diagnosis was made of metastasis of papillary thyroid carcinoma with positive immunohistochemical staining. Contrast computed tomography (CCT) of the chest and abdominal cavities showed multiple perivascular subpleural metastases (1.0 – 5.0 cm) in the lungs. Osteolytic damage to the right club bone, the sixth left rib and hemangioma S_{VI} of the liver of the right lobe. Ultrasound examination of the neck revealed a solid tumor node measuring 2×1.3 cm in the right lobe of the thyroid gland. Other parts of thyroid gland and neck had no signs of pathology. The patient was clinical euthyroid (TSH – 1.2 mkmol/ml, TD – 8702.0 ng/ml, anti – TG –

98.2 mol/ml). The patient underwent thyroidectomy with right-sided dissection of the lymph nodes of the neck.

Pathological conclusion: «papillary thyroid cancer with metastases to the pre-tracheal lymph nodes». In conditions of hypothyroidism (TSH – 87.64 mkmol/ml, Tg – 25191.0 ng/ml, Anti-Tg – 188.2 mol/ml), the patient underwent a course of radioiodine with I^{131} (8720.0 MBq). During whole body scintigraphy, the accumulation of a radiopharmaceutical in the projection of the frontal part on the left, the thyroid gland on both sides, the left belt on the left (most intensively), the chest and ilium on the right was revealed. The accumulation of I^{131} with small metastases in the lungs (which are visualized by CCT) was not detected. A blood test for thyroid hormones after a month of taking 125 mg of L-thyroxine: TSH – 0.209 mkmol/ml, Tg – 65726.0 ng/ml. Further the patient had metastasis of papillary thyroid cancer in the left scapular bone while taking 125 mg of L-thyroxine. Subsequent monthly studies of thyroid hormone levels are presented in table I.

In conditions of hypothyroidism (TSH > 100 μ Mo / ml), the patient underwent a course of radioiodine with I^{131} (9504.0 MBq). During whole body scintigraphy the accumulation of the radiopharmaceutical in the projection of the left frontal lobe, the thyroid gland to the right, the shoulder girdle to the left, in the projection of the roots of the lungs (most intense on the right side), in the iliac region to the right. Compared with the previous study, no negative dynamics were detected. Suppressive hormone therapy is recommended. A year later, while taking 125 mg of L-thyroxine: TSH – 0.015 mkmol/ml, TG – 149.3 ng/ml, Anti-TG – 33.14 months/ml. Against the background of a four-week cancellation of taking 125

Table I. Thyroid hormone monitoring after scapular bone removal

Thyroid hormone name	Thyroid hormone levels after removal of scapular metastases		
	1 month later	2 months later	3 months later (thyroxine withdrawal)
TSH, μ Mo/ml	0008	0008	>100
Tg, ng/ml	313.4	214.0	524.4
Anti-Tg, mol/ml	38.82	29.03	37.71

Table II. Thyroid hormone monitoring after treatment with radioactive iodine

Thyroid hormone name	Thyroid hormone levels after the last treatment with radioactive iodine			
	2 months later (125 mg L-thyroxine)	3 months later (125 mg L-thyroxine)	4 months later (125 mg L-thyroxine)	5 months later (4 months discontinuation of thyroxine)
TSH, mkmol/ml	0033			0009
Tg, ng/ml	99.04	105.3	112.3	86.66
Anti-Tg, mol/ml	28.36			26.3
fT4 ng/dl (N 0.93-1.7)		2.0		2.16

Table III. Thyroid hormone monitoring after treatment with radioactive iodine

Thyroid hormone name	Thyroid hormone levels after treatment with radioactive iodine		
	3 months later (125 mg L-thyroxine)	6 months later (125 mg L-thyroxine)	3 months later (125 mg L-thyroxine)
TSH, mkmol/ml	0035	0011	0.01
Tg, ng/ml	90.0	80.69	102.0
Anti-Tg, mol/ml	19.19	<10.0	17.43
fT4 ng/dl (N 0.93-1.7)	1.7	1.72	1.82

mg of L-thyroxine (TSH – 86.46 mkmol/ml, Tg – 325.1 ng/ml, anti-Tg – 28.94 mol/ml, ++ Ca – 1.1 ml mol/l), the patient underwent a course of radioiodine with I¹³¹ (5995.0 MBq). During whole body scintigraphy the accumulation of the radiopharmaceutical agent in the projection of the left frontal lobe of the brain, in the thyroid gland, mainly on the right side, in the left scapula, in the projection of the roots of the lungs (most often intensively in the right part), in the right iliac region. Compared to the previous study the intensity of use of the accumulation focus has decreased. Subsequent monthly studies of thyroid hormone levels are presented in table II.

Against the background of a four-week cancellation of taking 125 mg of L-thyroxine (TSH – 51.16 mkmol/ml, TG – 174.4 ng/ml, Anti-TG – 38.56 mol/ml, ++ Ca – 1.02 ml mol/l) the patient underwent a course of radioiodine with I¹³¹ (5995.0 MBq). With scintigraphy of the whole body, the radiopharmaceutical agent accumulates in the projection of the thyroid gland mainly on the right side, in the left scapula, in the right iliac region. Compared with the previous study, positive dynamics were revealed. Subsequent monthly studies of thyroid hormone levels are presented in table III.

Against the background of a four-week cancellation of taking 125 mg of L-thyroxine (TSH > 100 mkmol/ml,

Tg – 491.0 ng/ml, Anti-Tg – 17.04 mol/ml, ++ Ca – 1.16 ml mol/l) the patient underwent treatment with iodine with I¹³¹ (5995.0 MBq). During whole body scintigraphy the accumulation of the radiopharmaceutical agent was detected in the projection of the left frontal lobe, in the thyroid gland, in the left scapula, Th_{IX}, in right iliac wing. Compared with the previous study positive dynamics were revealed. Suppressive hormone therapy was recommended. Recognizing the presence of severe uncompensated hypothyroidism as a result of radioiodine therapy the patient required a restriction of physical activity and disability was not restored. Until now the patient continues to be monitored and can independently rise.

CONCLUSIONS

This is a very unusual and rare manifestation of PTC metastases in multiple areas of the skull and bones with such a large metastasis from a primary occult tumor. Distant metastasis from differentiated thyroid carcinoma must be considered in the differential diagnosis of destructive lesions of the base of the skull regardless of the patient's age. You should always try to conduct a histopathological diagnosis of tissues followed by a complete thyroidectomy, radioactive iodine or external radiation as well as chronic

suppression of thyroid-stimulating hormone. Surgical resection of the metastatic lesion should be carried out only in carefully selected cases because it is associated with a significant incidence. The patients' heavy morale and poor prognosis for this pathology make clinicians more alert, attentive, and work closely with various specialists.

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The Authors declare no conflict of interest.

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