

Metastasis of Papillary Carcinoma Thyroid to Central Nervous System: A Report of Two Cases

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Abstract

Papillary carcinoma of thyroid is the most common type of thyroid neoplasm. It generally carries a good prognosis since it is usually confined to the thyroid and tends to metastasize to regional lymph nodes. Distant metastases occur in only 5 to 15% cases. Brain metastases are extremely rare, occurring in 0.1 to 5% of reported cases. We report two cases of papillary carcinoma of thyroid metastasizing to brain.

Introduction

Papillary carcinoma of thyroid is the most common type of thyroid malignancy accounting for about 70-80% of malignancies of thyroid gland. These tumours can affect any age but occur most frequently in third to fifth decade of life. Women are predominantly affected in the ratio of 2:1 to 4:1.¹ Thyroid cancers are more often found in patients with a history of low- or high-dose external irradiation. Papillary tumours of the thyroid are the most common form of thyroid cancer to result from exposure to radiation. Papillary carcinoma of thyroid may be sub clinical or may present with asymptomatic thyroid mass or a nodule. Other symptoms like pain, difficulty breathing, or difficulty swallowing, stridor, vocal cord paralysis, haemoptysis, rapid enlargement are rare. At the time of diagnosis, 10-15% of patients have distant metastases to the bones and lungs.^{2,3} Brain metastases from papillary carcinoma of the thyroid gland are unusual.^{4,5} Patients present with symptoms pertaining to the site of involvement of brain. This tumour usually spread by lymphatics, hence commonly

presents with lymph node enlargement. Few reports of brain metastasis have appeared in the literature.

We report two cases of metastasis of papillary carcinoma of thyroid to brain as presenting with central nervous system symptoms. Our first case was 50 year old female with occult primary who presented with central nervous system symptoms. Second case was a known case of papillary carcinoma with multiple metastases to brain.

Case Summary

A 50 year old female presented to our hospital with complaints of left sided weakness, headache, vomiting, convulsions and bladder incontinence since fifteen days. However, patient was conscious and oriented to time, place and person. The patient had no complaints pertaining to thyroid; however no thyroid function tests were performed. CT showed 64 x 52 mm mass in atrium and occipital horn of right lateral ventricle with a solid enhancing and cystic non enhancing component. MRI also showed 3.6 x 3.7 x 4.1 cm solid component and 3.3 x 2.5 x 3 cm cystic component with perilesional oedema. The lesion was causing mass effect on pons, midbrain, basal ganglia and thalamus on right side. Microscopy revealed metastasis of papillary carcinoma thyroid (Figs. 1, 2). Biopsy of the tumour confirmed papillary thyroid carcinoma supported by positive thyroglobulin staining (Fig. 3). The patient died one day post-operative.

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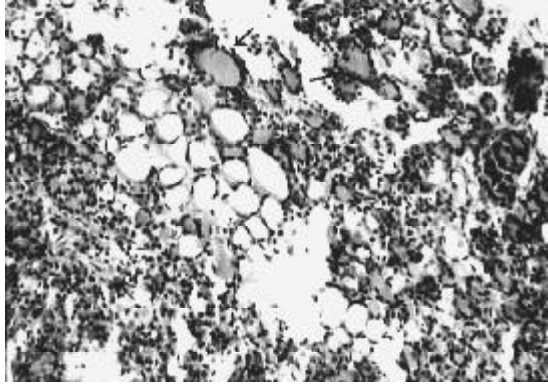


Fig. 1 : Shows thyroid follicles of varying sizes filled with colloid (4 X HE).

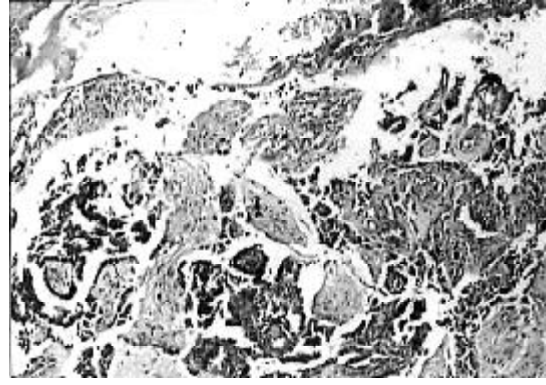


Fig. 4 : Shows the tumour arranged in papillary configuration (4 X HE).

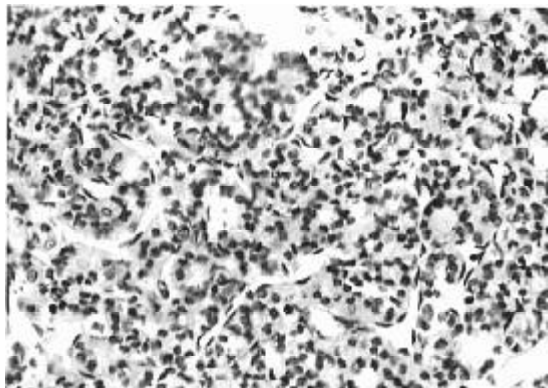


Fig. 2 : Shows thyroid follicles lined by cuboidal epithelium and filled with colloid (20 X HE).

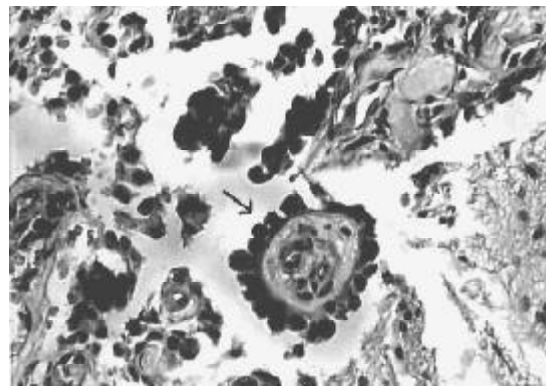


Fig. 5 : Shows papillae with central fibrovascular core and lined by cuboidal cells (20 X HE).

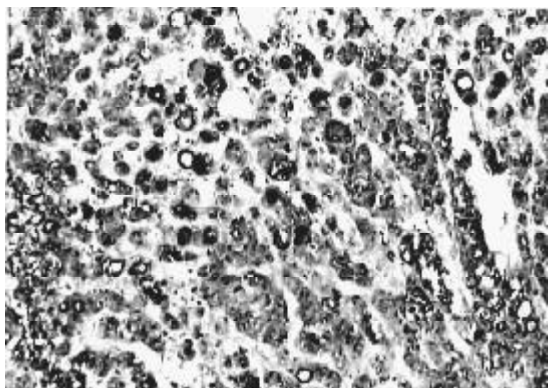


Fig. 3 : Thyroid follicles showing thyroglobulin positivity (4 X HE).

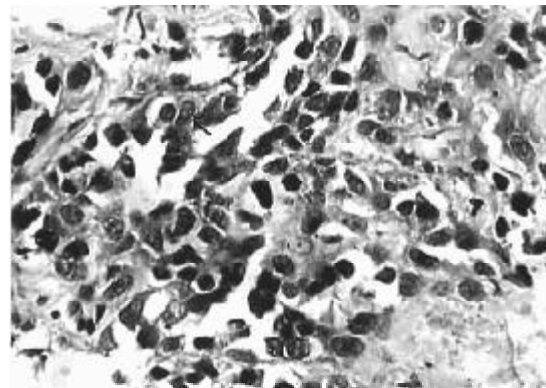


Fig. 6 : Cells showing intranuclear inclusions (40 X HE).

Other case was of a 54 year old female who presented with complaints of tingling and numbness in left upper limb with radiating pain from neck to finger since 6 months. She also complained of weakness in left upper and lower limb. The patient also had a thyroid swelling. MRI head revealed multiple ring enhancing lesions in both cerebral and cerebellar hemisphere. USG thyroid showed bilateral, well defined, round, heterogenous nodules, 1.5 x 1.6 cm in right lobe and 1.1 x 1 cm in left lobe with punctate calcification. There were also multiple, enlarged lymph nodes on left side of neck. FNA thyroid revealed papillary carcinoma thyroid. Microscopy of brain lesion showed a tumour with papillary configuration (Figs. 4,5,6). Occasional psammoma bodies were present with cholesterol clefts, haemorrhage and necrosis.

Discussion

Papillary carcinoma thyroid is the most common type of thyroid malignancy seen in the population especially females. This tumour usually has a good prognosis. It spreads via lymphatics and commonly associated with enlarged cervical lymph nodes. Bone and lung are the usual sites of distant metastasis, however brain metastasis is rare and only brain metastasis is extremely unusual. We present such two rare cases who presented with CNS symptoms without involvement of any other system (like pulmonary or bone). Literature review however does not reveal exact number of such cases. One case of unusual brain metastasis was reported by Anguiar *et al*⁴ in 2001. Other similar case was reported by Ota *et al*⁵ in 2001 with distant metastasis to cerebrum from papillary carcinoma thyroid. There was no abnormality in thyroid function test or chest X-rays. Salvati *et al*⁶ described twelve cases of thyroid carcinoma metastasis in which only four cases were of differentiated carcinoma and only four out of twelve had only brain metastasis. Others also involved lung and bones. Cihangir *et al*⁷ also contributed similar case in 2004. A case of cerebellopontine angle metastasis was described by Sung Tae Cha⁸

in 2000. An extensive study over five decades was conducted by Dinneen *et al*⁹ included 100 patients (45 females and 55 males) of papillary carcinoma thyroid. Out of 100 patients, only 3% had brain metastasis. Another case of multiple haemorrhagic brain metastases from papillary carcinoma thyroid was described by Isoda *et al*.¹⁰ Jianyi Li *et al*¹¹ also described three cases of brain metastases of papillary carcinoma thyroid. Our cases were also similar to the literature which presented with only brain metastasis. First case was of 55 year old female who presented with neurological abnormalities without thyroid complaints similar to the case of Ota *et al*.⁵ second case was of 54 year old female presenting with multiple cerebral metastasis with enlarged thyroid.

To conclude, we report two rare cases of papillary carcinoma thyroid presenting with distant metastasis to brain without involvement of any other system.

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ONLY GOT FIVE MINUTES?

Non-visible haematuria (NVH) is detected to oxidation of organic peroxide by haemoglobin on a urine dipstick of a fresh voided urine sample, containing no preservative. Routine microscopy for confirmation of dipstick haematuria is not necessary. A UTI should be considered if nitrite and leucocyte are also positive on dipstick.

In patients taking anticoagulant or antiplatelet drugs, the presence of haematuria (VH or NVH) should not be assumed to be caused by the drugs and these patients should also be evaluated.

If haematuria is detected the following steps should be followed. Establish if it is transient or persistent and whether VH or NVH is present. Check serum creatinine and estimated glomerular filtration rate (eGFR). Quantity proteinuria on a random urine sample for albumin creatinine ratio (ACR) or protein creatinine ratio (PCR).

Referral for urological evaluation including renal imaging and cystoscopy is appropriate for patients with a single episode of VH (any age), s-NVH (any age); a-NVH aged > 40.

Haematuria in the absence of proteinuria should be followed up annually with repeat testing for haematuria, proteinuria/albuminuria eGFR and blood pressure monitoring as long as the haematuria persists. Those who develop abnormalities of these parameters should be referred to a nephrologist.

Only a minority of patients diagnosed with CKD will progress to established renal failure while a substantial proportion will die of cardiovascular disease.

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