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Clinical Report

Study of papillary carcinoma of thyroid with uncommon sites of metastasis

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Abstract Papillary carcinoma of thyroid (PCT) is the most common type of thyroid malignancy and metastasis to cervical lymph nodes is very common [1]. Blood borne metastases from PCT are less frequent than with the other thyroid carcinomas [2]. Uncommon sites include lungs, bone, atrium, cerebrum, kidney, skin [3].

We report four cases of papillary carcinoma with uncommon sites of metastasis.

One showed tumor emboli of 2.5 cm in internal jugular vein, one had tumor deposit in metacarpal bone and lung, one had a subcutaneous tumor deposit and one was a micropapillary carcinoma with metastasis axillary nodes. All these four cases were classical PCT.

Keywords Papillary carcinoma · Metastasis · Tumor thrombi · Internal jugular vein · Bone · Lung · Skin

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Introduction

Papillary thyroid carcinomas (PTC) usually manifest with slow progression and generally carries a good prognosis, since it usually remains intrathyroidal and tend to spread locally to regional lymph nodes alone [1]. We present four cases of PCT with metastases to uncommon sites presenting as forming a thrombus of 2.5 cm in right jugular vein and deposits in metacarpal bone, skin and axillary lymph node. Only a few cases of thyroid carcinoma with a tumor thrombus in the jugular vein have been reported in literature [2]. Metastasis to bone by papillary carcinoma is uncommon but is reported in ribs, pelvis, vertebra, skull, humerus, femur. Ribs being common [4]. Distant metastases occur in about 10% of patients of PCT, who can still survive for many years [5]. Deposits of PTC in the skin are distinctly uncommon [6].

Material and methods

Of 1250 thyroidectomy samples received in 3 years between 1st July 2006 to 30th 2009. 46 cases of papillary carcinoma of thyroid (PCT) were diagnosed.

We report four cases of PCT with uncommon sites of metastasis.

Case-1

A 40-year-old woman presented with midline neck swelling, Ultrasonogram revealed a cystic lesion of 3 cm in the right lobe of thyroid and two enlarged lymphnodes and a thrombus in internal jugular vein, for which FNA was done and reported PCT. Total thyroidectomy with clearance of draining lymphnodes was done along with removal of thrombi in right internal jugular vein. Histopathology report confirmed classical papillary carcinoma thyroid with deposits in 2/6 lymphnodes and also thrombi of 2.5 cm located in internal jugular vein (Figs. 1–3).

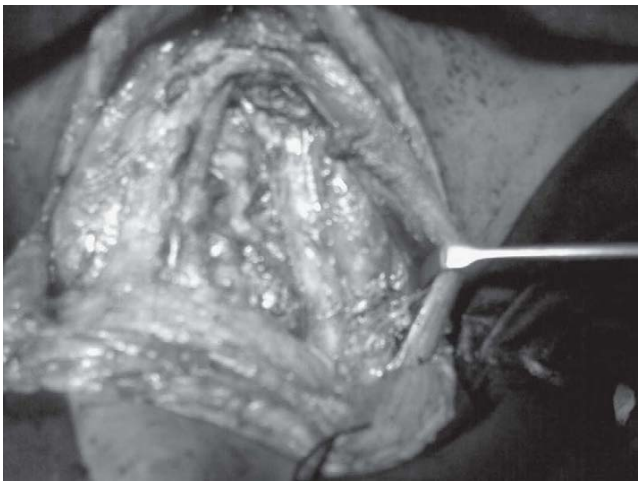

Fig. 1 Dilated internal jugular vein

Fig. 2 Tumor thrombi

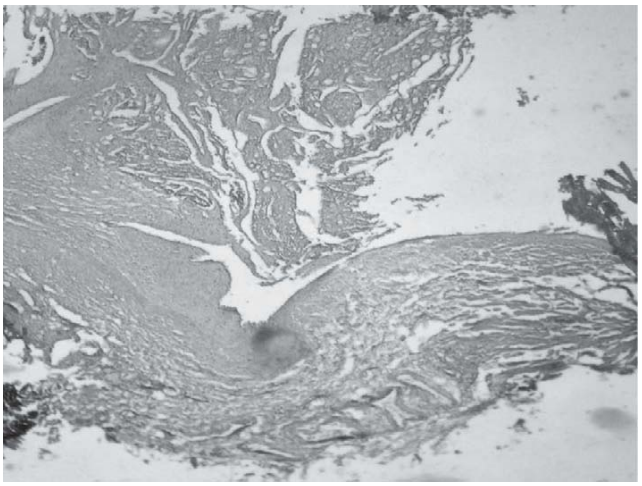

Fig. 3 Low power (LP) vein with tumor thrombi

Case -2

A 32 -year-woman presented with breathlessness, a swelling of right wrist and a midline neck swelling, X-ray revealed multiple opacities in both lungs. FNA was done from thyroid, lungs and wrist and diagnosed papillary carcinoma thyroid and secondary deposit in bone and lung. Histopathology report from total thyroidectomy specimen, biopsy from metacarpal bone and core biopsy from lung confirmed the diagnosis (Figs. 4, 5).

Fig. 4 32 years woman with swelling neck and wrist

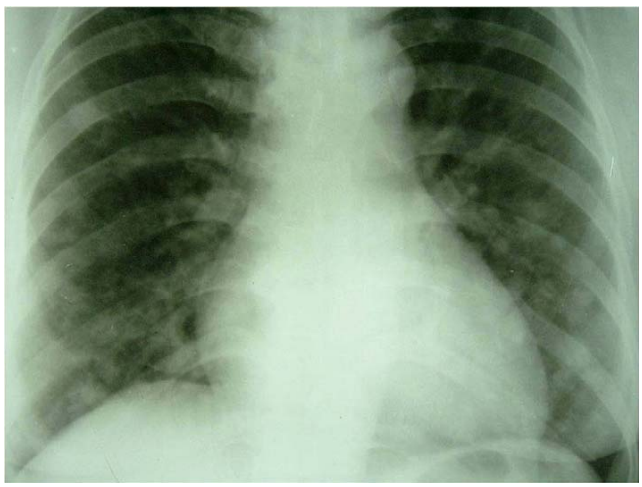

Fig. 5 X-ray with bilateral lung opacities

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Case-3

A 44-year-old woman presented with a subcutaneous nodule of 1 cm on forearm, FNA was done and reported papillary carcinoma thyroid, ultra sonogram of thyroid revealed a cystic lesion of 2 cm. FNA was done from thyroid and skin nodule and reported papillary carcinoma thyroid and secondary to skin. Histopathology of total thyroidectomy specimen and skin nodule confirmed the diagnosis (Fig. 6).

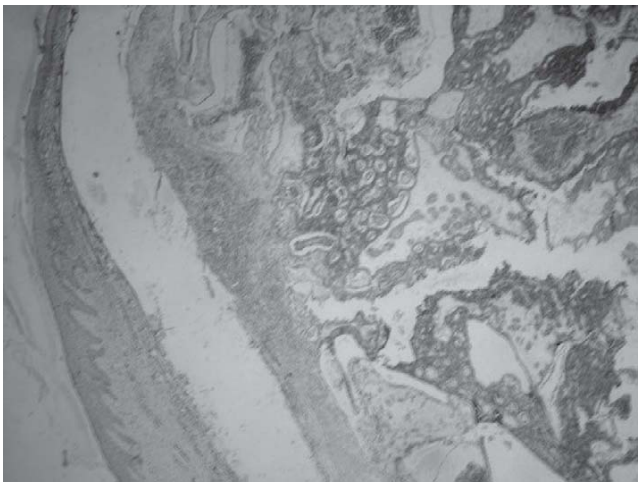

Fig. 6 LP skin with underlying tumor

Cases 4

A 24-year-old man presented with cervical and axillary lymphadenopathy, FNA was done and reported as papillary carcinoma thyroid with secondary deposit in lymphnode. Ultrasonogram of thyroid was normal. Intraoperative frozen sections of lymphnode also confirmed PCT depostin lymphnode. Total thyroidectomy was done. Out of 20 sections given from thyroid gland one section showed one focus of micropapillary carcinoma (Fig. 7).

Discussion

In our study of the 46 papillary carcinomas reported at Dr. Pinammaneni Siddhartha medical college and research foundation, 64% had regional lymphnode metastasis at the time of presentation. The age group ranged from 22–54 years, with an M:F ratio of 1:6. Of these classical PCT were 68%, others included follicular variant, tall cell variant, micropapillary variant and encapsulated variant.

PTC is known for its indolent nature and erratic behavior.

Bad prognostic indicators are extra capsular invasion / extra nodal spread, foci of anaplasia in the tumor, age of

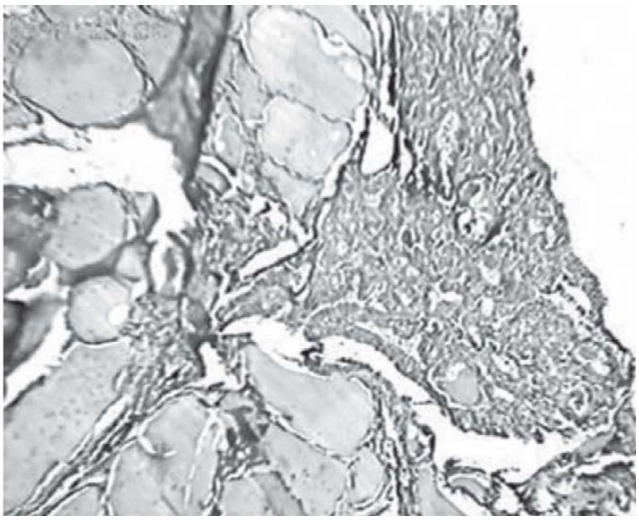

Fig. 7 LP micropapillary carcinoma

the patient (>45 years) and presence of distant metastasis [1, 2]. A direct association between presence of extranodal spread and occurrence of distant metastasis has also been reported [3]. PCT commonly spreads through lymphatics and vascular spread is rare. However, when it occurs it is usually to bone, brain, lungs and soft tissue [4]. Involvement of other structures in the neck like larynx, trachea and esophagus is mainly due to direct infiltration of tumor into these structures [5].

Nikiforova et al. have demonstrated that BRAF gene mutation was associated with extrathyroidal extension [7].

Yuko et al. reported a case of PCT forming tumor emboli in left jugular vein, superior venacava and atrium [2].

Several reports of PCT tumor emboli in vessels and distant metastasis to cerebrum, kidney, bones, lungs, larynx, esophagus have been published in literature [8, 3, 4, 5]. Case-1 of present study had tumor thrombus of 2.5 cm attached to the wall of internal jugular vein which is a rare presentation.

Thomas et al. in their study of 21 cases of PCT metastasis to bone, revealed ribs as the common. Others included vertebrae, pelvis, skull, femur and humerus [4]. In our case-2 the involved bone are 3rd, 4th and 5th the metacarpal bone which is uncommon.

The literature reported 42 cases of skin metastases, for which the primary thyroid tumor was PTC in 57% and follicular thyroid carcinoma in 42% [6]. Avram, Mahalingam et al. reported a case of PCT with skin and choroid metastasis [9]. Case-3 had a skin nodule at the time of presentation.

Micropapillary carcinomas are known to present with secondaries in draining lymphnode axillary node involvement is uncommon [10]. Case-4 patient presented with axillary nodes metastasis and later diagnosed as micropapillary carcinoma of thyroid.

Summary

Of 1250 thyroid specimens received during the period of 3 years, 46 were diagnosed papillary carcinoma thyroid. Four of these cases had interesting features.

Tumor emboli of 2.5 cm in internal jugular vein, tumor deposit in metacarpal bone and lung, subcutaneous tumor deposit and a micropapillary carcinoma with metastasis to axillary nodes, are rare sites of metastsis of paillary carcinoma of thyroid.

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