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Case Report

Papillary thyroid microcarcinoma with large and cystic neck metastasis: report of a case and review of articles

Mehrdad Katebi, Ghodratollah Maddah**, Mahdi Tarhini*, Ali Fawzi***

Abstract

Papillary microcarcinoma of thyroid (PMC) as a variant of papillary carcinoma less than 1 cm in size is a new clinicopathological entity, with high incidence and good prognosis. There are many differences between PMC and clinically apparent papillary thyroid carcinoma. Also, there are some PMC case reports with unusual metastasis and aggressive courses. Prognostic factors are age, size and morphology of tumor, multifocality, cervical lymphadenopathy, etc. Here we report a case of unifocal PMC less than 0.4 mm in size in one lobe of thyroid in an elderly man which was discovered by thorough cutting of thyroid gland after detecting its large and cystic cervical metastasis.

Keywords: Papillary, microcarcinoma, thyroid carcinoma.

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Papillary microcarcinoma (PMC) of thyroid gland is a papillary carcinoma less than 1 cm in size, which is usually latent (found incidentally) or occult (found after detection of metastasis). The term "minute papillary carcinoma" is used when the size is less than 5 mm. Although there is regional lymph node metastasis in some cases, it is often microscopic and may remain dormant. Large lymphadenopathy and distant metastasis is very rare and is related to morphology, size and familial versus sporadic form of tumor.

Case Report

An 83-year-old man with history of a mass lesion on the right lateral aspect of neck since 7-8 years ago with gradually increasing size referred to the surgical clinic of Ghaem Hospital of Mashhad University on Dec 15th, 2004. The lesion was painless and symptom free. At the time of presentation, there was a 5 × 8 × 15 cm tense mass without any tenderness, redness or warmth. Physical examination showed that the tumor was located predominantly under the sternocleidomastoid muscle with extension towards anterior and posterior triangles of the neck. Mandibular angle was the upper limit of the tumor. The mass was fixed without any movement by swallowing. There was no history of dysphagia and pain but recently he complained of dyspnea and dysphonia. In past medical history of the patient, he had controlled hypertension with atenolol tablets. His vital signs were almost normal.

Fine needle aspiration (FNA) of the neck mass obtained a yellow fluid with inflammatory nature in pathology report, without evidence of malignancy. The fluid bacteriologic culture was also negative.

Chest X-ray showed, left shift of the trachea and a prominent aortic arch and increased pulmonary vascular markings. Ultrasonographic study reported a cystic, multi-septate mass in the neck with some solid and calcified

*Department of Pathology, Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, Iran.
**Department of Surgery, Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, Iran.
Correspondence to: Dr Mehrdad Katebi, Department of Pathology, Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, Iran. e-mail: mehkat@yahoo.com

portions which were positioned close to the right lobe of thyroid gland but it was not possible to define the primary origin of the mass. On thyroid scan, it was reported as a cold node near thyroid with the origin of right lobe of thyroid (figure 1). Blood biochemistry and cell blood count and other laboratory tests were almost normal.

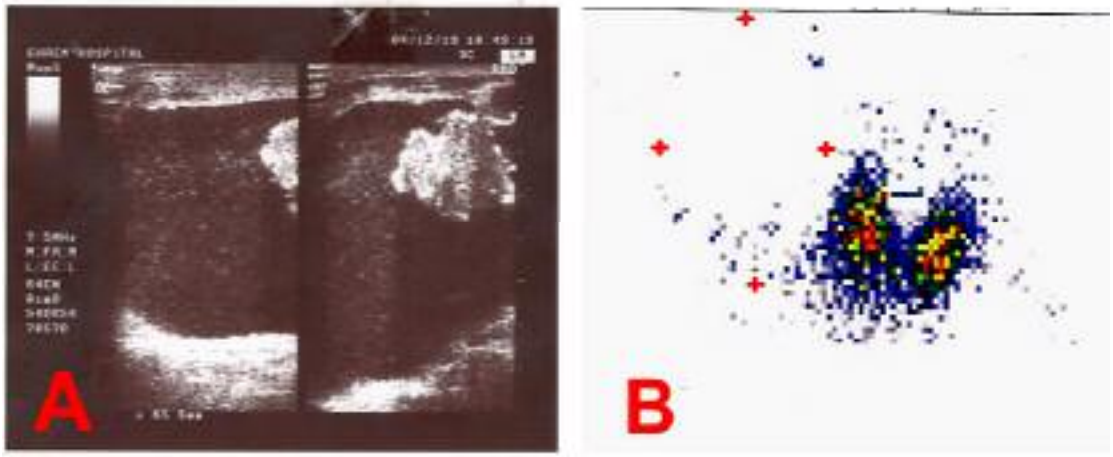

Figure 1. Ultrasonographic image (A) showed large and cystic, septate mass with solid areas near right thyroid lobe which was cold on thyroid isotope (Tc^{99}) scan (B) (mass is defined by + sign).

Based on the findings, the patient became a candidate for surgical operation on Dec 21st, 2004. Under general anesthesia, after L-shape incision on the high lateral neck, a large multicystic mass was exposed which was close to the right thyroid lobe but there was no significant mass in the thyroid gland. A total right thyroid lobectomy plus isthmectomy and near-total left thyroid lobectomy was performed. Frozen section was also performed but was not diagnostic. Finally, the mass and thyroidal tissues were totally excised and sent for pathological studies. We performed complete pathologic studies for all samples. In gross evaluation and microscopic views, main neck mass was revealed papillary projections in a predominantly multicystic mass with necrotic and hemorrhagic areas with diagnostic criteria of papillary carcinoma (figure 2). There were small lymphoid aggregates around the tumor, representing the possibility of lymph node metastasis at first, but this was not completely clear. In the first sections of left and right thyroidectomy tissues, there was no evidence of carcinoma on gross and microscopic examination. After whole sampling and multiple sectioning, we only found a less than 0.4 millimeter focus of papillary microcarcinoma of thyroid with follicular pattern in right thyroid gland (figures 3 and 4). The patient was discharged on Dec 28th, 2004 in good general condition to continue his treatment in the Department of Oncology under necessary endocrinology consultation.

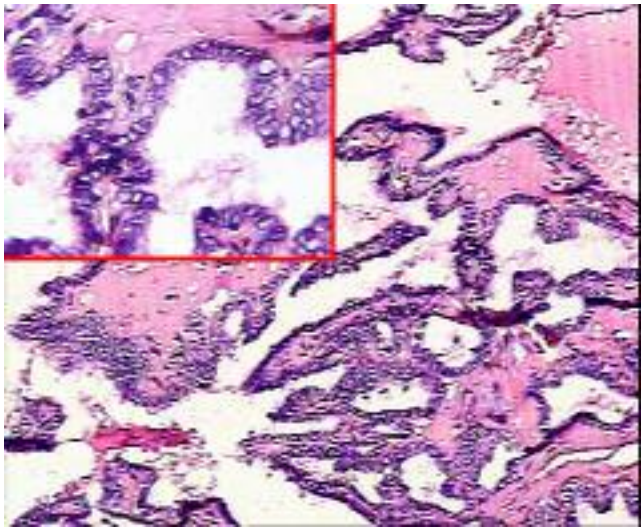

Figure 2. Microscopic view of metastatic tumor with clear papillary architecture and complete cytological criteria for diagnosing papillary carcinoma (cell crowding, nuclei with cleft and ground glass appearance – H&E staining, x100 [inset x400].

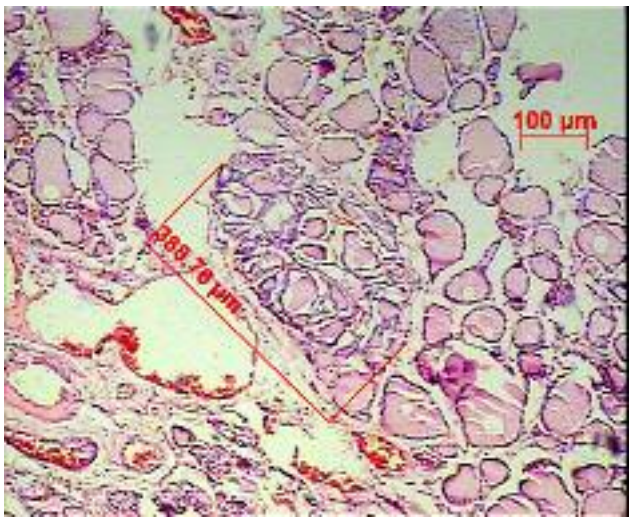

Figure 3. Microscopic view of neoplastic focus in right thyroid lobe less than 0.4 mm size - H&E Staining- used Carl–Zeiss Image Analysis software ×40. Note the non-encapsulated, non-sclerotic and follicular pattern of microtumor.

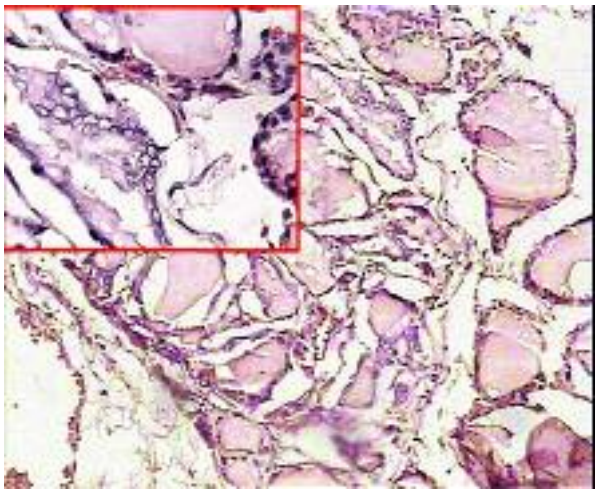

Figure 4. Microscopic view from the neoplastic focus, close to normal adjacent thyroid follicles - H&E Staining, ×100. Note the characteristic cytology of neoplastic cells, next to normal-appearing thyroid follicle cells, enough for diagnosis of PMC - ×400.

Discussion

The term papillary microcarcinoma was recommended to replace the traditional name of occult papillary carcinoma by WHO classification. It refers to papillary carcinomas less than 1 centimeter in size, usually discovered incidentally [1-3]. Occult papillary carcinoma of thyroid is a cancer of thyroid gland found subsequent to discovery of metastatic lesions while latent carcinoma is a cancer found incidentally in thyroidectomy specimens or autopsy [1]. Occult and latent papillary carcinoma may or may not be a PMC.

PMC is an extremely common incidental finding (25-36%) in thyroidectomy samples for other reasons and also in population-based autopsy studies [2,4] and usually has excellent prognosis even if metastasized to lymph nodes or distant sites [1]. All patients in a study on 90 PMC cases remained well during a mean follow-up period of 17.3 years [5]. Based on a retrospective study on 4,208 thyroidectomies over a period of 16 years, 25.5% out of 251 cases of papillary carcinoma were PMC and 90% were found incidentally; a mean follow-up period of 7 years revealed only one case of recurrence after successful treatment and no cases of death due to PMC. The authors concluded good prognosis of treated PMC [6]. Many authors proposed that the existing definition of papillary microcarcinoma be reserved only for tumors in adults [7] and even avoiding the term of "carcinoma" for this tumor when occurring in adults in its typical form, and to replace the term of papillary microtumor (made at a thyroid cancer meeting in Porto and colloquially referred to as "the Porto proposal") [8]. Harach and colleagues suggested that papillary microcarcinoma of less than 5 mm (minute papillary carcinoma) be considered as normal finding and be left untreated [9] although like the case we described here it may have metastasized to lymph nodes or other sites.

Patients with non-encapsulated PMC or those with lymphadenopathy grater than 3 centimeters are rare but may have unfavorable prognosis [1].

Latent papillary carcinoma has highly variable prevalence in different countries and the highest reported rate was about 35.6% in Finland [1,10]. It differs from clinical papillary carcinoma with lack of female predominance (our case was a man) and majority of these tumors remain dormant without growing need for clinical expression [1]. Most latent papillary carcinoma have follicular architecture and the

most common type is not capsulated and is sclerotic with stellate configuration (occult sclerosing papillary carcinoma) [1]. Less commonly, type is non-sclerotic and circumscribe, composed of aggregates of neoplastic follicles that are cytologically distinct from surrounding follicles (like the case we reported above) and sometimes are multifocal in that lobe or coexist in the other lobe (23 and 17%, respectively) [5]. Rare examples are encapsulated [11].

The cardinal molecular alteration in papillary thyroid carcinoma is somatic rearrangements of RET protooncogene located on chromosome 10q11.2 which is specific for the papillary carcinoma and is also detected in papillary microcarcinoma as a very early carcinogenic event in these tumors [2,12].

Regional lymph node metastasis, often microscopic, coexists in 16% of cases and may remain dormant even without excision [5]. Thyroid papillary microcarcinoma rarely recurs in lymph nodes after lymph node dissection but there are some reports of lymph nodes recurrence [13].

Cystic metastasis of papillary carcinomas is very problematic because of misdiagnosis as bronchial cleft cyst and other benign cystic lesions of the neck. Our case had a cystic and large neck metastatic lesion which was discovered by imaging and finally pathologic study after surgery. Although distant metastasis of PMC is uncommon and is usually found in lung or bone, metastatic papillary thyroid microcarcinoma to unusual sites like skin has also been reported [14]. Even metastasis to the parapharyngeal spaces which is very rare in thyroid carcinomas has been reported in PMC cases [15,16]. Thus, microcarcinoma cannot be ignored and metastases may arise, although uncommon.

Some forms of inherited non-medullary carcinoma of thyroid are PMC with autosomal dominant inheritance. These forms are more aggressive and need aggressive treatment in contrast to non-familial forms [1,17-19].

As association between non-medullary thyroid carcinoma and secondary hyperparathyroidism has been rarely reported in patients with renal failure and a few cases of papillary thyroid microcarcinoma have been reported in these patients [20].

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