CASE REPORT

Cribriform-morular variant of papillary carcinoma: The sporadic counterpart of familial adenomatous polyposis-associated thyroid carcinoma

Shubadha V. Kane, Izhar N. Bagwan*

Department of Pathology, Tata Memorial Hospital, Dr. Ernest Borges Road, Parel, Mumbai, Maharashtra 400 012, India

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Summary The cribriform-morular variant (C-MV), an unusual and peculiar subtype of papillary thyroid carcinoma, has been observed frequently in familial adenomatous polyposis (FAP)-associated thyroid carcinoma and also in sporadic thyroid carcinoma. Here we present a case of similar unusual sporadic thyroid tumour, which presented with cervical lymph node metastasis. © 2005 Elsevier Ltd. All rights reserved.

Introduction

The increased incidence of thyroid carcinomas in familial adenomatous polyposis (FAP) patients is well recognized. These thyroid neoplasms display distinctive clinicopathological features and generally show good prognostic outcome. Recently, unusual sporadic tumours that share the morphological features of FAP-associated thyroid carcinomas have also been described.1 We document herein a case of similar unusual sporadic thyroid tumour, which presented with cervical lymph node metastasis.

Case report

An 18 year old young male, college student, presented to the surgical out-patient department with chief complaints of swelling over the neck, midline as well as on the lateral side of the neck since eight months. The midline neck swelling moved on deglutition. He was diagnosed with pulmonary and abdominal tuberculosis one year back and took anti-tuberculosis treatment for six months. There were no complaints of hyperthyroidism as well as hypothyroidism.

On examination, the left lobe of thyroid was enlarged. Multiple hard swellings were noted in the left supraventricular, upper cervical and mid cervical regions. Systemic examination was within normal limits. Haematological and urine examinations were normal. The patient was euthyroid at the time of presentation. Serum Calcitonin levels were normal (<5 pg/ml). Ultrasonography of the neck was suggestive of thyroid neoplasm. Technitium thyroid scan revealed a cold nodule in the left lobe of thyroid gland, while the right...
lobe was normal. Fine needle aspiration was suggestive of thyroid neoplasm either papillary or follicular. Near total thyroidectomy with radical lymph node dissection (RND) was performed and the specimen was sent for histopathological examination.

On gross examination the left lobe of thyroid gland measured $5.5 \times 4 \times 3$ cm in size. On sectioning, the entire lobe was replaced by a well circumscribed firm, white nodule with a thin rim of compressed normal thyroid gland at the periphery. The right lobe measured $4 \times 3 \times 1.5$ cm in size and was grossly unremarkable. The specimen of RND revealed two large lymph node masses each measuring $4 \times 3 \times 2$ cm in size and grossly appeared metastatic.

Histologically the tumour was encapsulated and exhibited an intricate blending of cribriform, follicular, trabecular and solid patterns of growth, with morular (squamoid) areas. Cribriform areas were prominent, being formed by anastomosing bars and arches of cells in the absence of intervening fibrovascular stroma (Fig. 1). Follicular areas were devoid of colloid. Papillary pattern was not seen. The tumour cells were cuboidal or tall with frequent nuclear pseudostratification and abundant eosinophilic cytoplasm. Intranuclear grooves and inclusions were noted. Occasional Psamomma body was seen. Though microscopic areas of necrosis were observed, marked nuclear atypia and mitosis were classically absent. Morules with typical nuclear clearing were scattered in the tumour. (Fig. 2) Hyalinisation and haemorrhage were seen, but amyloid deposition was not seen. Capsular and vascular invasion with extrathyroidal extension was observed. Adjacent thyroid parenchyma was

![Figure 1](image1.png) Photomicrograph of papillary carcinoma of thyroid showing predominant cribriform and follicular pattern, (H&E stain, 25X). Inset: note that the tumour cells are immunopositive for thyroglobulin, (H&E stain, 200X).

![Figure 2](image2.png) Photomicrograph showing extensive morular (squamoid) areas (arrow) within the tumour, (H&E stain, 200X).
unremarkable. The tumour cells were immunopositive for thyroglobulin (Fig. 1) and negative for calcitonin. Histological examination of the RND specimen revealed metastatic deposits of the thyroid carcinoma to the lymph nodes. Finally, a histopathological diagnosis of cribriform-morular variant of papillary carcinoma of thyroid with nodal metastasis was offered and patient was asked to undergo investigations to look for FAP. The patient underwent a colonoscopic examination of the gastrointestinal tract which was within normal limits. Hence, it was concluded that this is an unusual sporadic tumour sharing the same morphological features. The patient was later referred to the radiation medicine department for further treatment.

Discussion

Carcinoma of the thyroid gland is seen commonly in young individuals with papillary and medullary types being two most common types. Presence of classical nuclear features of papillary carcinoma and presence of organoid pattern with amyloid deposition help in the accurate diagnosis.1

The cribriform-morular variant (C-MV), an unusual and peculiar subtype of papillary thyroid carcinoma, has been observed frequently in familial adenomatous polyposis (FAP)-associated thyroid carcinoma and also in sporadic thyroid carcinoma.2 According to Xu et al.,2 this variant is more common in young females. It exhibits the morphological features of a distinctive papillary neoplasm along with solid, cribriform and squamoid-morular areas. The cribriform and morular features make this a separate entity which could be mistaken for a high grade aggressive thyroid neoplasm. But lack of nuclear atypia, mitosis and necrosis help in excluding the diagnosis of a poorly differentiated thyroid carcinoma.2,3

Morules are a diagnostic clue to the C-MV of papillary carcinoma, and are superficially similar to squamous metaplasia. In order to clarify the histogenesis of morules and to differentiate them from squamous metaplasia, Hirokawa et al.4 immunohistochemically compared the morules with squamous metaplastic cells. They observed that the squamous metaplastic cells were immunopositive for low- and high-molecular-weight cytokeratin and showed intense cell membrane positivity with beta-catenin, but were negative with Bcl-2. On the contrary, the morular cells were positive with Bcl-2 and negative or weak positive with cytokeratin and Beta-catenin. S-100 protein-positive dendritic cells were observed in the metaplastic nests, but not in morules. Finally, they concluded that morules were associated with nuclear and cytoplasmic aberrant localization of beta-catenin, and are not an early form of squamous metaplasia.4

Similar findings were observed by Xu et al.2 and Cameselle-Teijeiro and Chan.5 In the present case, the morules were positive for Bcl-2 and cytokeratin. Due to lack of availability, Beta-catenin immunostaining could not be performed.

Association of C-MV of papillary carcinoma with FAP is commonly seen. The absence of polyps on colonoscopy and germline mutation in the adenomatous polyposis coli (APC) gene provides evidence that the tumour represents the sporadic counterpart of FAP-associated thyroid carcinoma.1–4 Cameselle-Teijeiro and Chan5 observed that the behavior of this variant was quite similar to that of the conventional papillary carcinoma. Lymph node metastasis is known with this variant. Hence, because of the distinctive histological features of this thyroid carcinoma and its association with familial syndrome, this unusual entity requires special mention.

References