ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 49. 23
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 3, Issue – 5, September - 2018, Page No. :289 - 293

Rare Mixed Thyroid Cancers- Two Case Reports

Dr. Nitya Subramanian[1], DLO, DNB, Department of ENT, Sir Ganga Ram Hospital, New Delhi-110060
Dr. Sangeet Kumar Agarwal[1], DLO, DNB, Department of ENT, Sir Ganga Ram Hospital, New Delhi-110060
Dr. Alok Agarwal[1], MS, Department of ENT, Sir Ganga Ram Hospital, New Delhi-110060
Dr. Pallav Gupta[2], MD, Department of Pathology, Sir Ganga Ram Hospital, New Delhi-110060

Corresponding Author: Dr. Nitya Subramanian, DLO, DNB, Department of ENT, Sir Ganga Ram Hospital, New Delhi-110060

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Introduction: Thyroid cancers constitute 0.5%- 1% of all cancers of which differentiated cancers are most common. Mixed thyroid carcinomas are rare entities comprising only 0.5% of thyroid cancers. These tumours pose challenges in diagnosis by fine needle aspiration cytology.

Case Reports: Here, we present two rare cases of these mixed thyroid carcinomas. First is a 21 year old female diagnosed as medullary thyroid carcinoma on Fine Needle Aspiration Cytology (FNAC).She underwent definitive surgical treatment. Final histopathology revealed diagnosis of a nodular tumour with mixed features predominantly medullary carcinoma with areas of follicular carcinoma, confirmed on immunohistochemistry.

Second report is of a 45 year old female diagnosed as medullary thyroid carcinoma on fine needle aspiration cytology (FNAC). Definitive surgical treatment was performed. Histopathology showed a mixed tumour with medullary and papillary components as confirmed on immunohistochemistry.

Conclusion: The knowledge of these rare carcinomas is important in avoiding a dilemma in management. Recognition of these mixed tumours are difficult by FNAC and the recognition of medullary component is essential for definitive treatment. We re-emphasize the importance of immune-histochemistry in arriving at an accurate diagnosis.

Keywords: Thyroid, Carcinomas, Immunohistochemistry,

Introduction

Thyroid malignancies constitute approximately 0.5% - 1% of all malignancies diagnosed every year. Differentiated carcinoma (which includes papillary and follicular carcinoma) is the most common malignancy affecting the thyroid gland whereas medullary thyroid cancer constitutes only 2-8%. [1]

Mixed thyroid carcinomas are a rare entity comprising only 0.5% of all thyroid cancers. [2] They are composed of neoplastic cells showing features of medullary carcinoma with positive immunoreactivity to calcitonin. These maybe intermingled with either follicles, papillae, oxyphilic or solid areas with positive immunoreactivity to thyroglobulin. The first description of these mixed tumours was by Hales et al in 1982, followed by Pfaltz in 1983 [1].

Presence of two different malignant cells in one neoplasm poses a definite challenge in diagnosis by fine needle aspiration cytology and hence an uncertainty about the further treatment and prognosis. Here in we present two rare cases of mixed medullary thyroid carcinoma with concomitant follicular and papillary components being established on final histopathological examination.

Case report 1

A 21 year old female patient presented with a neck swelling of 6 months duration. She had no family history of thyroid cancers or Multiple Endocrine Neoplasia (MEN) syndrome. Neck examination revealed a 2x2 cm midline thyroid swelling, which was mobile and moved on deglutition with no evidence of cervical lymphadenopathy. Fine needle aspiration of the thyroid swelling suggested a diagnosis of medullary carcinoma. Pre-operatively calcitonin was 150. Total thyroidectomy withcomprehensive neck dissection was performed.

Histo-Pathological Examination (HPE) revealed a nodular tumour with monomorphic cells arranged in a nesting pattern with eosinophilic material resembling amyloid. On the periphery, few tumour nests showed micro-follicular cells with with lympho-capsular invasion typical of follicular carcinoma, thus consistent with the diagnosis of mixed thyroid carcinoma comprising of medullary and follicular components. Presence of dual tumour population was confirmed on immunohistochemistry. The medullary component stained positive for calcitonin, synaptophysin and the follicular component showed positive staining for thyroglobulin. Refer fig. 1 and fig. 2 indicating HPE showing medullary thyroid cancer with positive calcitonin staining.

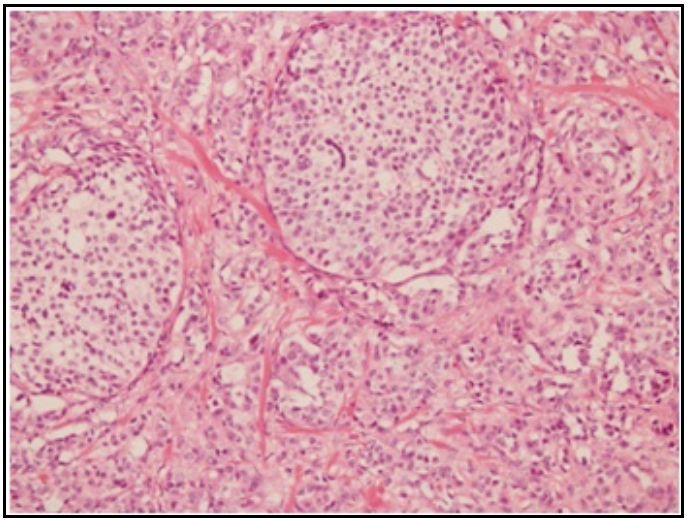

Fig. 1: HPE showing medullary thyroid cancer with positive calcitonin staining

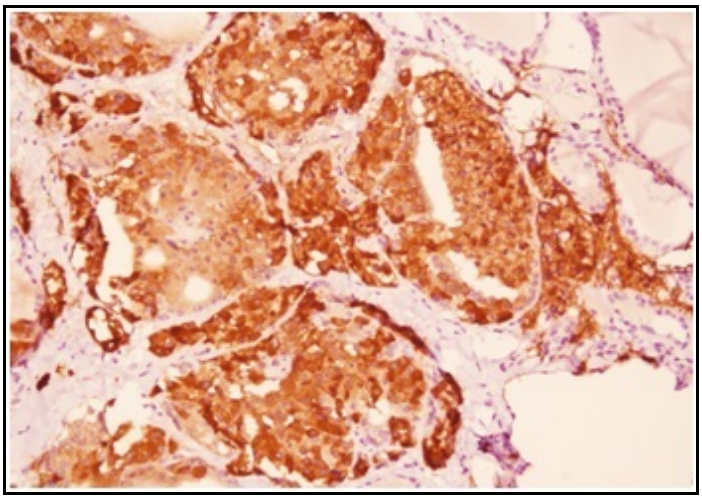

Fig. 2:HPE showing medullary thyroid cancer with positive calcitonin staining

Refer fig.3 and fig.4 for HPE section showing follicular carcinoma with positive thyroglobulin staining.

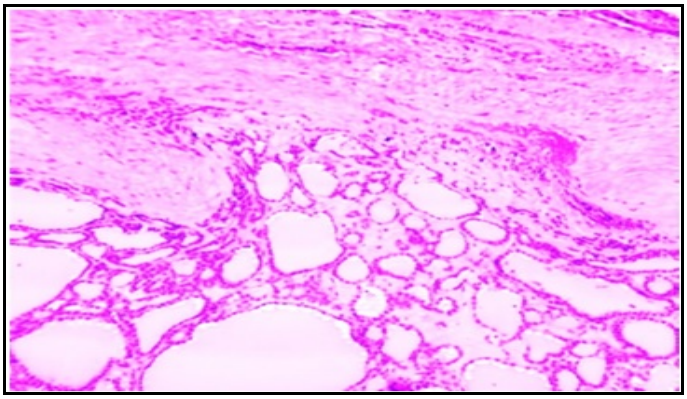

Fig. 3: HPE section showing follicular carcinoma with positive thyroglobulin staining.

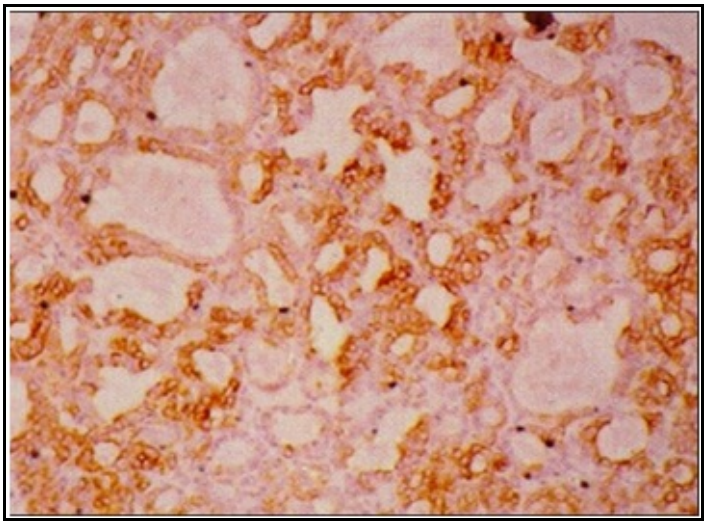

Fig. 4: HPE section showing follicular carcinoma with positive thyroglobulin staining.

Post operatively and at 1 year follow up calcitonin is in normal range and patient symptom free.

3.2 Case report 2

A 45 year old female patient presented to us with a one year history of slow growing swelling in the neck. She had no family history of thyroid cancers. Local examination revealed a solitary well defined nodule in the left lobe of thyroid with no palpable cervical lymph nodes. Ultrasound of the neck showed evidence of a thyroid lesion with enlarged lymph nodes on the left side. Fine needle aspiration suggested a diagnosis of medullary thyroid carcinoma. Preoperatively CarcinoEmbryonic Antigen (CEA) and Calcitonin were raised.

Total thyroidectomy with modified radical neck dissection with central compartment clearance was performed. On final histology,the appearance was typical of a medullary thyroid carcinoma with monomorphic cells in nesting and trabecular pattern. Focal amyloid deposition with positive congo red staining was seen. Immunostaining showed presence of tumour cells positive for calcitonin and chromogranin. Section from other side showed papillary structures lined by cells with overlapping nuclei with characteristic nuclear grooving, consistent with the diagnosis of papillary thyroid carcinoma. These tumour cells showed positive immune staining for thyroglobulin and CK-19 and negative for calcitonin. Refer fig. 5 and fig 6 for HPE section showing medullary thyroid carcinoma with positive immunostaining for calcitonin.

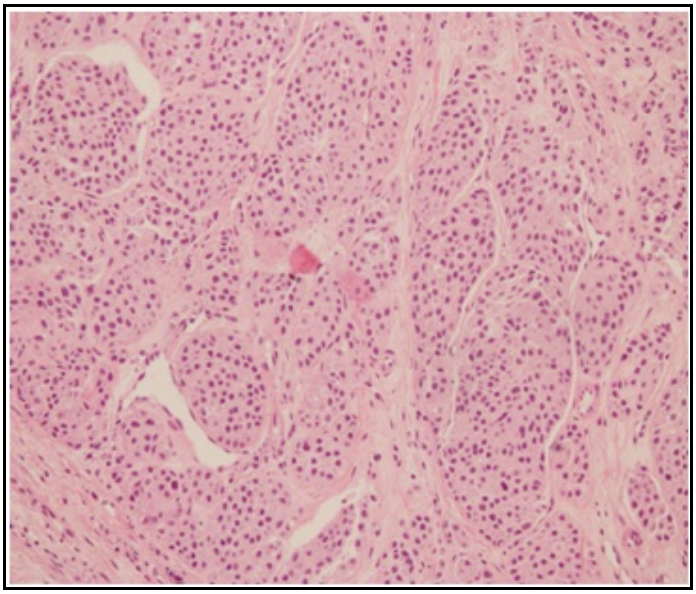

Fig. 5:HPE section showing medullary thyroid carcinoma with positive immunostaining for calcitonin

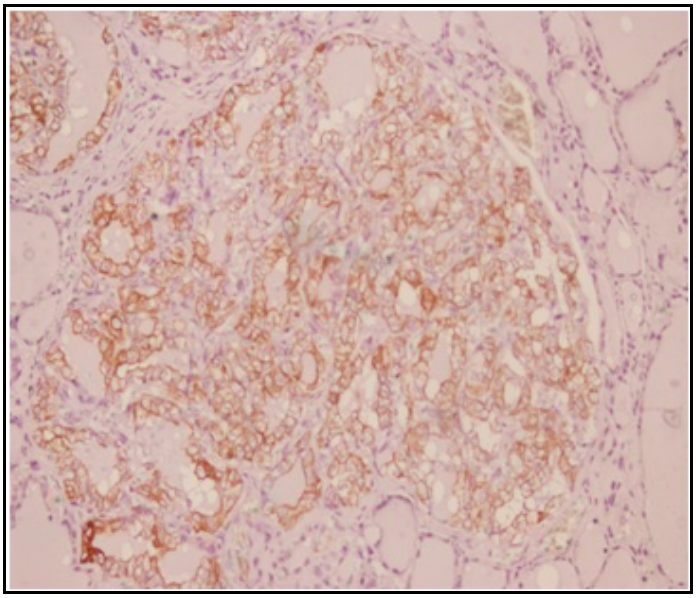

Fig. 6: HPE section showing medullary thyroid carcinoma with positive immunostaining for calcitonin

Refer fig. 7 and fig. 8 for HPE section showing papillary carcinoma with positive staining for thyroglobulin

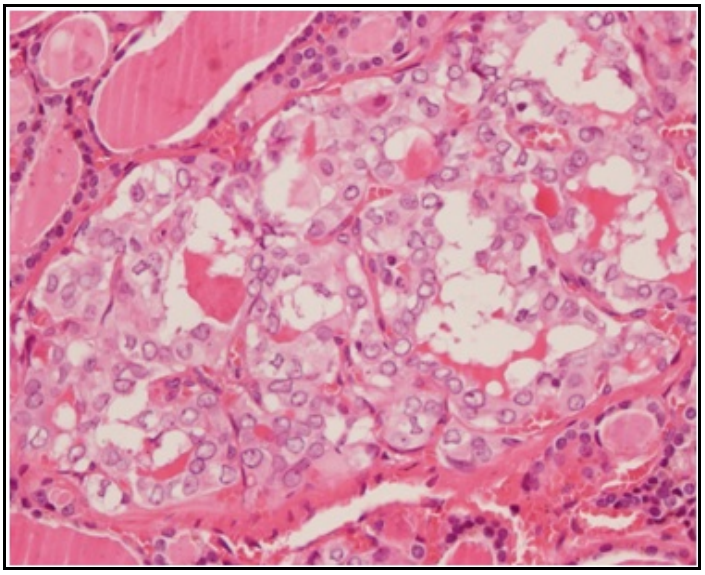

Fig. 7: HPE section showing papillary carcinoma with positive staining for thyroglobulin

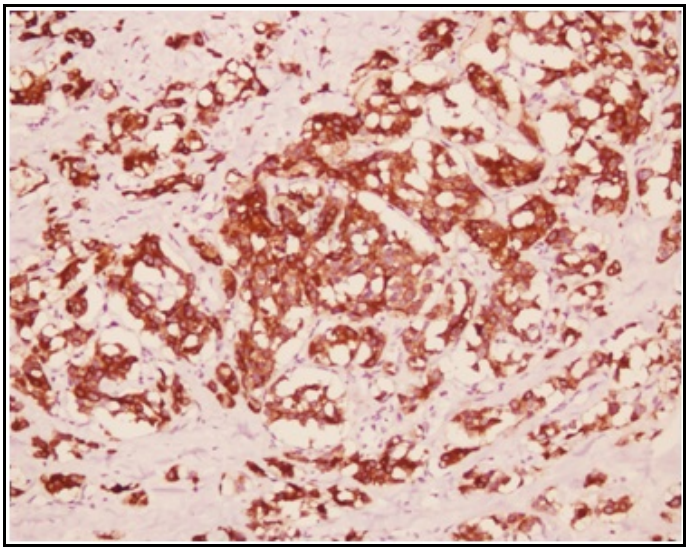

Fig. 8: HPE section showing papillary carcinoma with positive staining for thyroglobulin

Post operatively calcitonin levels were normal and at 1 year follow up patient is asymptomatic.

Discussion

Mixed thyroid cancers are very rare tumours that represent less than 0.5% of all thyroid malignancies. Fewer than 40 such cases have been reported so far.[2] As defined by world health organisation, they are tumours that demonstrate morphological features of both medullary carcinoma(showing immunoreactivity to calcitonin) and follicular or papillary carcinomas (showing immunoreactivity to thyroglobulin). [3]

These mixed tumors may present either in a synchronous fashion where they appear as anatomically separate tumours or as two components mixed within a single lesion. [4] Our cases showed both variants of these rare malignancies. In our first report, identification of mixed tumour was made with medullary and follicular carcinoma showing distinct immune histochemical differentiation. Presence of thyroglobulin positive neoplastic follicles formed a minor component of a predominant medullary carcinoma. In the second case presented, papillary and medullary carcinoma was present in a synchronous fashion each showing characteristic immunostaining.

The origin of these mixed thyroid carcinoma is not exactly established, yet one of the hypothesis shows that the tumour might arise from multipotent stem cells. An alternative hypothesis presumes a common oncogenic stimulus affecting both follicular and parafollicular cells. [5]

Recognition of these mixed tumours is difficult by FNAC and leads to high probability of misdiagnosis. [6] According to existing literature, the treatment of such tumours should be governed by its medullary component, thus the recognition of the medullary component of these mixed carcinomas by FNAC becomes very essential as the definitive surgical treatment for a medullary carcinoma includes not only thyroidectomy but a comprehensive neck dissection with no efficient adjuvant therapy. [7] Even the prognosis of mixed thyroid carcinoma depends upon the medullary component, thus the prognosis is also worse as compared to a pure papillary or follicular carcinoma. [2]

The knowledge of these rare carcinomas is important in avoiding a dilemma in further management. We re-emphasize the need to confirm the diagnosis by immune histochemistry in thyroid carcinomas to reach an accurate diagnosis.

References

1. Bashier AMK et al. Mixed medullary- Follicular thyroid cancer treated with surgery and radioiodine ablation: an Illustrative case. Ibnosina J Med BS 2015;7(1):31-36

2. Nangue C, Brun L, Portmann L, Volante M,Ris H, MonnierP et al.Mixed medullary-Papillary carcinoma of thyroid :report of a case and review of literature..Head and Neck July 2009

3. Matias-Guiu X. Mixed medullary and follicular carcinoma of the thyroid. American Journal of Pathology. 1999.155(5)

4. Sadow, Peter M; Hunt, Jennifer L. Mixed medullary - follicular derived carcinoma of the thyroid gland. AdvAnat Path 2010;17(4):282-4

5. Tohidi M, Pourbehi G, Bahmanyar M, Eghbali SS, Hormozi MK, Mabipour I. Mixed Medullary- follicular carcinoma of the thyroid. Case reports in Endocrinology. 2013

6. Hseih MH, Lin MC, Shun CT, Chang TC. Fine needle aspiration cytology of mixed medullary- follicular thyroid carcinoma:a case report. ActaCytol 2008;52(3):361-5

7. Dusková, Jaroslava; Janotová, Dana; Svobodová, Eva et al.Fine needle aspiration biopsy of mixed medullary-follicular thyroid carcinoma. A report of two cases. Acta cytologica.2003.

List of Figures

List of Abbreviations

CEA: CarcinoEmbryonic Antigen

FNAC: Fine Needle Aspiration Cytology

HPE: Histo-Pathological Examination

MEN: Multiple Endocrine Neoplasia