

COEXISTENCE OF CARCINOMAS OF THYROID WITH MULTINODULAR GOITRES OF THYROID – A TWO-YEAR STUDY

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ABSTRACT

BACKGROUND

Multinodular goitre or nodular hyperplasia or adenomatoid goitre is the most common thyroid disease, which occurs due to deficient iodine intake. Initial hyperthyroid states, followed by follicular atrophy and secondary changes like haemorrhage, calcification and cystic degeneration occurs in most of the cases. Longstanding cases of nodular goitre can be associated with carcinomas, usually follicular carcinomas, and rarely papillary carcinomas.^[1] This study was done to know the incidence of coexisting malignancies, follicular and papillary carcinomas of thyroid, in longstanding nodular goitres of thyroid.

METHODS

All the cases of nodular goitres examined in the last two years were studied, including the thyroidectomy specimens and FNAC slides whichever was done. Extensive grossing of the thyroidectomy specimens was done to detect the possibility of malignancy in longstanding cases of nodular goitre of thyroid. Review of FNAC slides was done in cases where cytodiagnosis of coexisting malignancy was missed and detected in histopathological examination.

RESULTS

In the present study, conducted over a two-year period, out of 50 cases of thyroidectomy specimens of multinodular goitres studied, six cases were diagnosed to be having coexisting malignancy of thyroid, of which four were follicular carcinomas of thyroid and two were papillary carcinomas of thyroid. FNAC diagnosis of coexisting malignancy was initially missed in FNAC in two cases, i.e. one case each of follicular carcinoma and papillary carcinoma. These FNAC slides were reviewed and the foci of malignancies detected.

CONCLUSION

There is a possibility of malignancy of thyroid coexisting with longstanding multinodular goitre of thyroid, which should be kept in mind, while performing the needle biopsy and thorough examination of FNAC slides is needed to avoid missing the possible detection of the coexisting malignant lesion. Thyroidectomy specimens should be extensively grossed to detect these coexisting lesions, and review of FNAC slides should be done whenever needed for correlation with histopathological findings.

KEYWORDS

Multinodular Goitre, Papillary Carcinoma, Follicular Carcinoma.

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INTRODUCTION: Multinodular goitres of thyroid occur due to low iodine content of the water and soil, causing deficient intake of dietary iodine, leading to deficiency in thyroid hormone production, causing increase in TSH secretion. This causes an initial hyperactive thyroid and later follicular atrophy with massive storage of colloid, with or without nodularity. The thyroid is enlarged with distorted shape, with multiple nodules in cut section of the enlarged thyroid. Secondary changes are frequently noted, in the form of haemorrhage, calcification and cystic degeneration. Some

cases are seen to harbour coexisting carcinomas, usually of follicular type, and rarely of papillary type.^[2] So caution has to be exercised in reporting FNAC smears and tissue sections of nodular goitre to search for any coexisting foci of carcinomas, follicular or papillary type, to avoid any chances of missing the foci of carcinoma, in the smears or in tissue sections.

MATERIALS AND METHODS: Fifty cases of multinodular goitres of thyroid were retrospectively studied in a two-year period at Maharajah's Institute of Medical Sciences, Vizianagaram, A.P. FNAC was done in all the cases and complete thyroidectomy was done in all the cases and extensive grossing of all the specimens received were done for histopathological examination. FNAC findings were correlated with histopathological findings, and in case of discrepancy, thorough review of FNAC slides was done to correlate with confirmed histopathological diagnoses.

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RESULTS: Of the total of 50 cases of nodular goitres studied, a total of six cases were diagnosed to be having coexisting malignancy of thyroid, of which four cases were coexisting follicular carcinoma of thyroid and two cases were coexisting papillary carcinoma of thyroid. Diagnosis of coexisting papillary carcinoma of thyroid was initially missed in FNAC in one case and diagnosis of coexisting follicular carcinoma of thyroid was missed in FNAC in one case. These missed diagnoses of coexisting malignancies with multinodular goitre of thyroid, could be diagnosed in the histopathological examination of the thyroidectomy specimens. Review of the FNAC slides revealed the coexisting lesions of malignancies, with multinodular goitre of thyroid. Gross examination of the thyroidectomy specimens showed nodularity with colloid-filled areas along with cystic spaces. Cyst walls were properly examined and adequate grossing was done to avoid missing the possible diagnosis of coexisting malignancy.

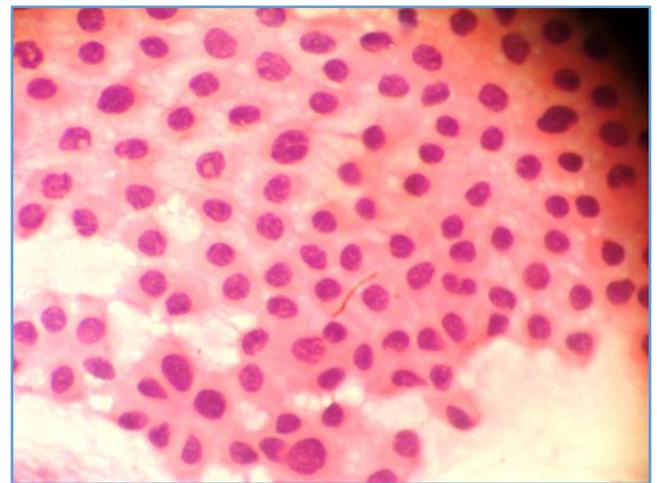


Fig 3. Cytosmear showing Sheet of enlarged Thyroid Follicular cells with Intranuclear inclusions, suggesting Papillary Carcinoma (H&E 400X)

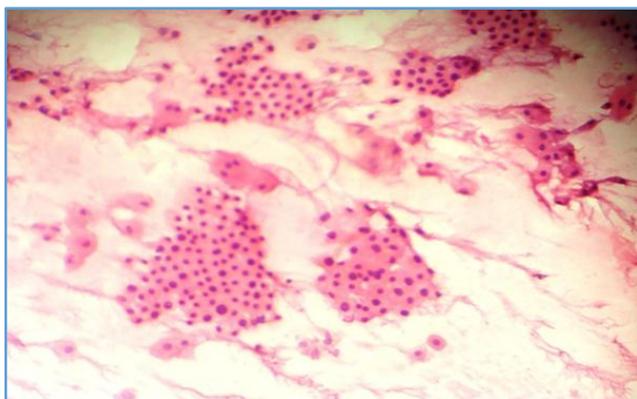


Fig. 1: Cytosmear showing Sheets and Clusters of Follicular cells and Hurthle cells in a background of abundant Colloid in smear suggesting Nodular Goitre, (H&E 400X)



Fig. 4: Gross Photograph showing Nodularity and cut section showing Solid, Colloid-filled and Multiple Cystic Areas



Fig. 2: Cytosmear showing Colloid with Papillary like structures of Thyroid Follicular cells with Definite Borders, suggesting Papillary Carcinoma, coexisting with Nodular Goitre. (H&E, 100X)

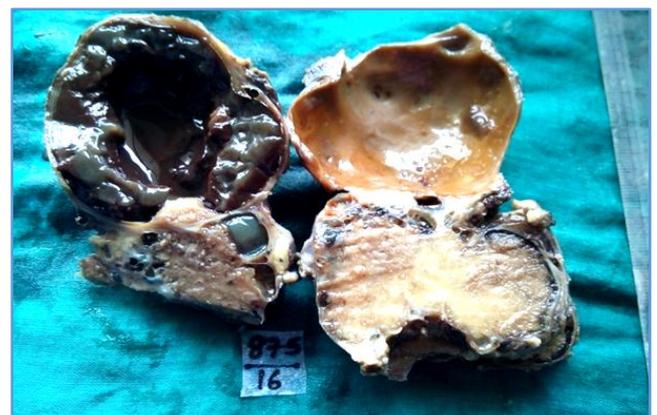


Fig. 5: Cut section of Gross Specimen of Nodular Goitre with Papillary Carcinoma, showing Solid Areas and Large Cystic Area

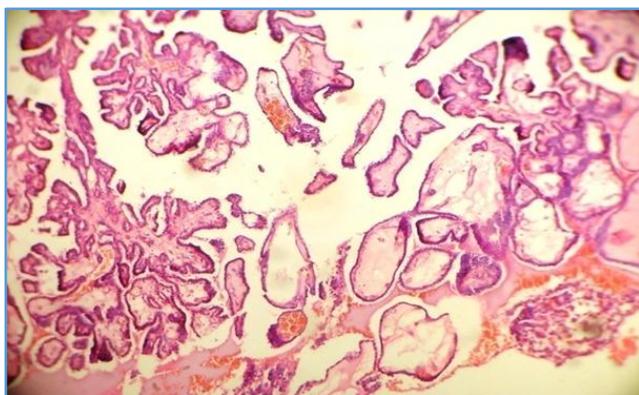


Fig. 6: Photomicrograph showing Picture of Nodular Goitre on Right side and Picture of Coexistent Papillary Carcinoma on Left Side (H&E 100X)

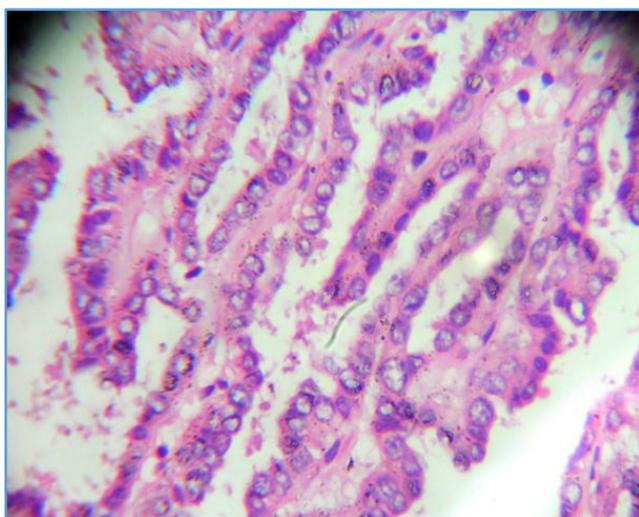


Fig. 7: Photomicrograph showing Branching Papillary Structures with Fibrovascular Core, lined by optically Clear Nuclei characteristic of Papillary Carcinoma of Thyroid (H&E 400X)

DISCUSSION: Malignancy arising and coexisting with multinodular goitre is not a very common occurrence, but can be found in few cases. So extreme caution has to be exercised in examining the cytospreads and tissue slides while dealing with the cases of multinodular goitre. In the present study, the incidence of papillary carcinoma coexisting with nodular goitre is 4%, in two years (2 cases of papillary carcinoma coexisting with nodular goitre, in total of 50 cases), and incidence of follicular carcinoma coexisting with nodular goitre is 8% (4 cases out of total of 50 cases). Geraldo Medeiros of Thyroid research lab reported an incidence of 4-17% in goitres, and mostly papillary carcinoma.^[3] Bisi et.al reported 13% of papillary carcinomas in thyroid surgeries.^[4] Autopsy incidence of papillary carcinomas in Japan was reported as 17%.^[5] Framingham study in 5000 people, where 218 with multinodular goitre were followed for 15 yrs. but no malignancy occurred.^[6] In 2010, Iqbal NCBI studied 397 patients with MNG and only 1 person had papillary CA. (incidence of 0.25%).^[7] Botrugno et al reported an incidence of 8.8% of papillary carcinomas in nodular goitres.^[8] So there are reports of varying degrees

of incidence of papillary carcinomas in nodular goitres. The cytological features of Nodular goitre for FNAC diagnosis are relatively abundant colloid, varying size groups of cells, mixed population of follicular and Hurthle cells and relatively low cellularity; and the cytological features of Papillary carcinoma for FNAC diagnosis in smears are high cellularity of smears, papillary structures, nuclear pseudoinclusions, nuclear grooves, metaplastic cytoplasm, nuclear overlapping, cell balls and psammoma bodies.^[9] The histological features for the diagnosis of nodular goitre are varied and usually show large follicles lined by flattened epithelium and others are extremely cellular and hyperplastic, and some others are composed predominantly of Hurthle cells.^[10] The histological features of papillary carcinoma are usually numerous true papillae, which are usually complex, branching and randomly oriented with a central fibrovascular core and single or stratified lining of cuboidal cells. The papillae are usually associated with the formation of follicles.^[11]

In the study by Iqbal M et al, in 2010, Out of 397 patients of multinodular goitre, only one patient was found to be papillary carcinoma (0.25%). In 220 patients of solitary thyroid nodules, 93 patients were diagnosed as carcinoma of thyroid (42.27%).^[12] In a study by Bombil I et al, in 2015, a total of 166 thyroidectomy specimens were studied, which revealed 70 histologically confirmed cases of nodular goitre, and incidental malignancy was found in four of 70 cases of nodular goitre (5.7%), and all were reported as papillary carcinomas.^[13]

CONCLUSION: Coexisting malignancy in nodular goitres, even if rare, is a possibility in some cases. The most common malignancy coexisting with nodular goitres is follicular carcinoma, but papillary carcinoma can also occur. This study shows the importance of meticulous examination of nodular goitre cases for microscopic detection of possible follicular or papillary carcinomas in some cases. Many other previous studies also corroborate this possibility.

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