

SPECTRUM OF THYROID LESIONS-HISTOMORPHOLOGICAL PATTERNS - EXPERIENCE AT A TERTIARY CARE CENTRE

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ABSTRACT

BACKGROUND

Thyroid gland is unique among endocrine organs. Thyroid tumours are the most common endocrine tumours which affect females more frequently at age range of 30-60 years most of which are benign. Malignant neoplasms of thyroid are not uncommon with follicular pattern lesions. Fine Needle Aspiration Biopsy is itself not a reliable method to differentiate between benign and malignant follicular tumours. Surgical resection helps in accurate diagnosis of these tumours.

AIMS AND OBJECTIVES

To study the distribution of lesions according to age, sex and with clinicohistomorphological correlation.

MATERIALS AND METHODS

This study is a retrospective and prospective analysis of thyroid swellings received at our tertiary care centre during the period of two and half years between January 2013 and June 2015 in the age range of 6 years to 78 years. A total of 148 specimens received during the period were analysed for clinical and histomorphological features. Immunohistochemistry was done for diagnosis of difficult cases.

RESULTS

Out of total 148 cases, most common clinical presentation was multinodularity in 67 cases (45%), solitary nodules in 54 (36%). Out of benign lesions-84 (57%) were nodular hyperplasias, 5 cases (3%) of colloid cyst. Malignant lesions composed 32 cases, PTC constituted 25 cases (18%), 3 (2%) cases of medullary carcinoma of thyroid, anaplastic carcinoma of thyroid diagnosed (0.5%).

CONCLUSION

Our study over a period of two and half years of thyroidectomies showed female preponderance. The most common lesion amongst benign lesions was nodular hyperplasia and papillary carcinoma was commonest in malignancies.

KEYWORDS

Nodular Hyperplasia, Papillary Carcinoma, Adenomas.

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INTRODUCTION: The thyroid gland lesions are the most common lesions in surgical practice with an incidence of 1.5%. Pathologic lesions of the gland range from congenital to neoplastic lesions. It essentially affects women with nodular goitrous lesions being most common in endemic regions.⁽¹⁾ Diseases of thyroid gland are one of the commonest endocrine disorders in India as well as in the world with an estimated 42 million people affected largest in the sub-Himalayan region.⁽²⁾ Nodular hyperplasia is the most

common thyroid disease, traditionally known as endemic goitre, the disease is due to low iodine content of the soil and water. Thyroid neoplastic lesions with adenomas represent the second most common histological pattern. Most predominant carcinoma being papillary carcinoma in malignant lesions. Anaplastic thyroid carcinomas and lymphomas are rarely encountered.

MATERIALS AND METHODS: This study is a retrospective and prospective analysis of thyroid swellings received at our tertiary care centre during the period of two and half years between January 2013 and June 2015 in the age range of 6 years to 78 years. A total of 148 specimens received during the period were analysed for clinical and histomorphological features. Immunohistochemistry was done for diagnosis of difficult cases.

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RESULTS:

Age	Number of patients
<10 years	2(1.3%)
10-20 years	4(2.7)
21-30 years	49(33%)
31-40 years	48(32%)
41-50 years	28(19%)
51-60 years	12(8%)
61-70 years	4(2.7%)
>70 years	1(0.5%)

Table 1: Age wise distribution of Thyroidal Lesions

Mean age of presentation was 21-40 years.

In the present study, there were 2 patients <10 years, 4 patients between 10-20 years, 49 between 21-30 years, 48 between 31-40 years, 28 between 41-50 years, 12 between 51-60 years, 4 between 61-70 years, 1 patient >70 years.

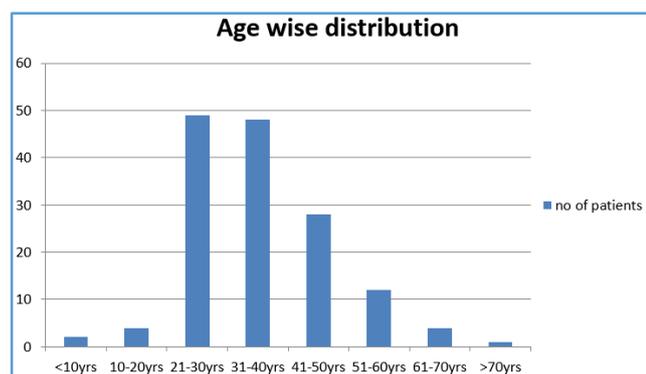


Figure 1: Showing age Distribution

Year	No. of cases
2013	59(40%)
2014	68(46%)
2015(Jan-June)	21(14%)
Total	148

Table 2: Year wise Distribution

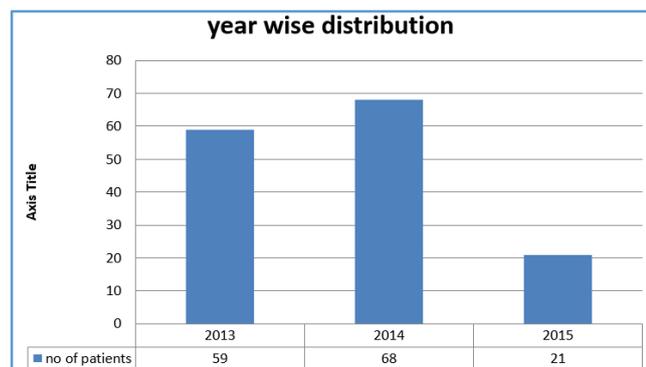


Figure 2: Showing year wise Distribution

Sex Distribution: Out of 148 cases, 146 (86.5%) cases were females and 2 (13.5%) cases were males.

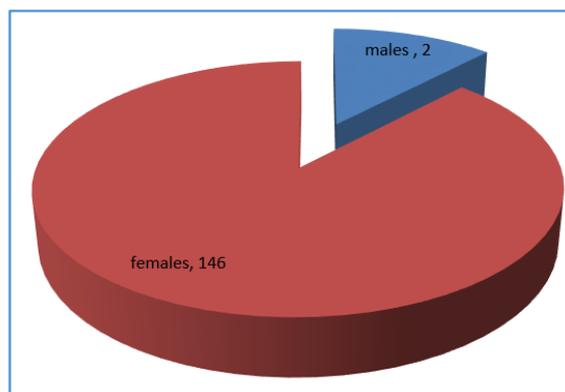


Figure 3: Showing Sex wise Distribution

Clinical presentation	Number
Solitary nodule	54(36%)
Multinodularity	67(45%)
Cystic lesion	10(7%)
Lymphadenopathy	17(12%)
Total	148(100%)

Table 3: Clinical Presentation

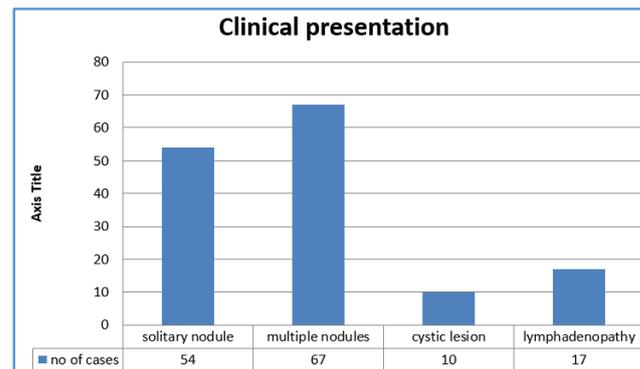


Figure 4: Showing Clinical Presentation

Benign lesions	No. of cases
Nodular hyperplasia	84(57%)
Follicular adenoma	17(11%)
Hashimoto's thyroiditis	8(5%)
Colloid cyst	5(3%)
Others	2(1.5%)
Total	116

Table 4: Distribution of Benign Lesions

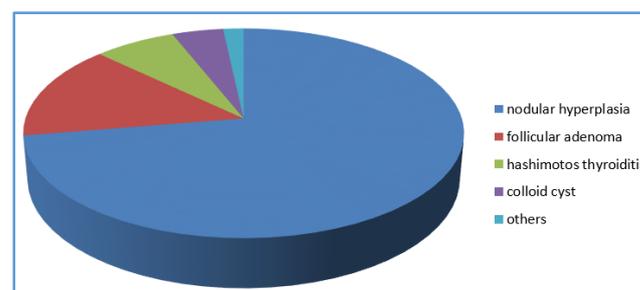


Figure 5: Distribution of Benign Lesions

There were 148 (100%) cases, out of which 116 (78%) were benign lesions and 32 (22%) were malignant. Among benign lesions, nodular hyperplasias were 84 (57%), follicular adenomas were 17 (11%), 8 (5%) were Hashimoto's thyroiditis, 5 (3%) colloid cysts and 2 (1.5%) cases were diagnosed of autoimmune origin.

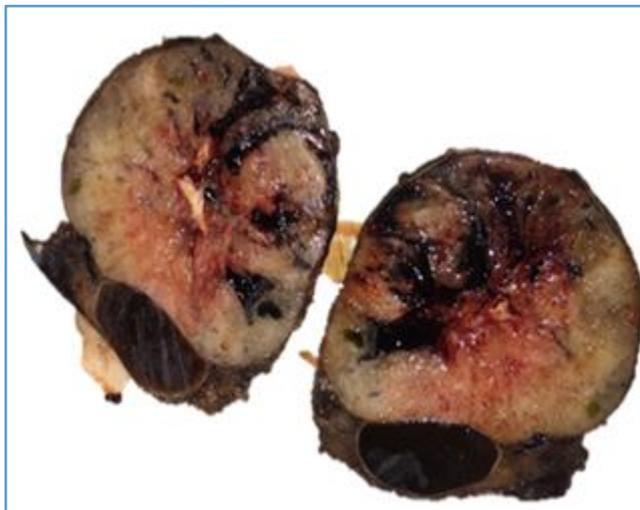


Figure 6: Gross Picture of Colloid Goitre with areas of Haemorrhage

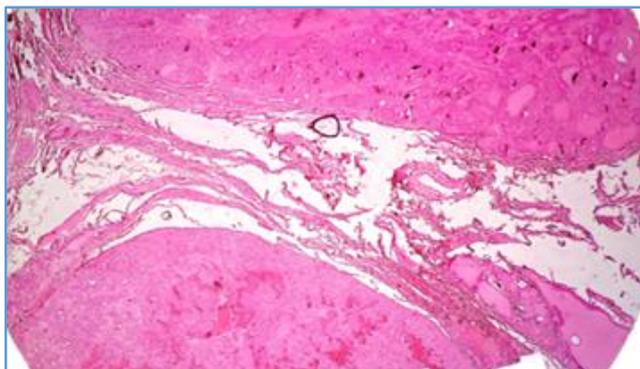


Figure 7: 10x view of Follicular Adenoma of Thyroid

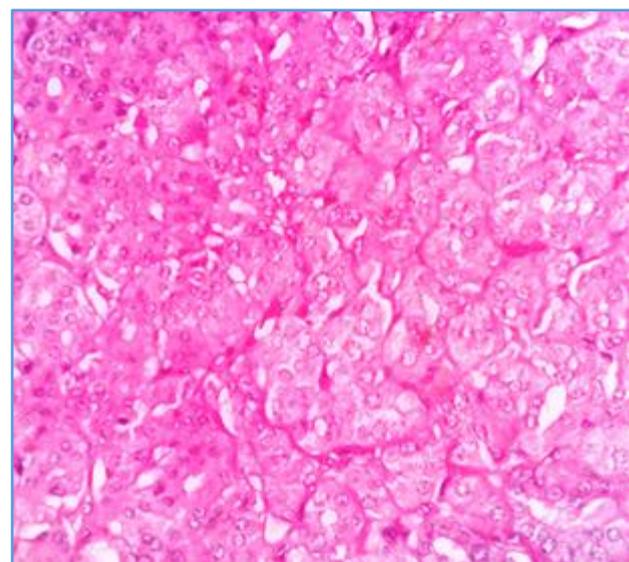


Figure 8: High Power view of Follicular Adenoma

Malignant lesions	No. of cases
Papillary carcinoma of thyroid	25(18%)
Medullary carcinoma of thyroid	3(2%)
Anaplastic carcinoma	1(0.5%)
Others	3(2%)
Total	32

Table 5: Distribution of Malignant Lesions

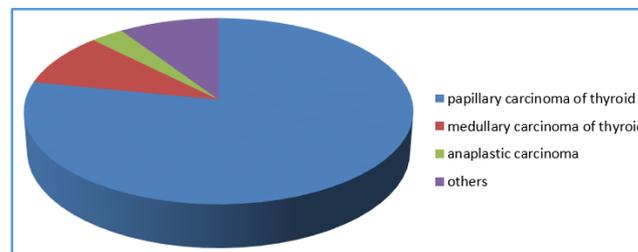


Figure 9: Showing Distribution of Malignant Lesions

Out of 148 cases, 32 (22%) cases were diagnosed to be malignant. 25 (18%) cases were diagnosed as papillary carcinoma of thyroid, 3 (2%) were medullary carcinoma of thyroid, 2 (0.5%) were follicular carcinomas, 1 case of colloid goitre with foci of micropapillary carcinoma and 1 case of anaplastic carcinoma.



Figure 10: Gross Picture of Papillary Thyroid Carcinoma

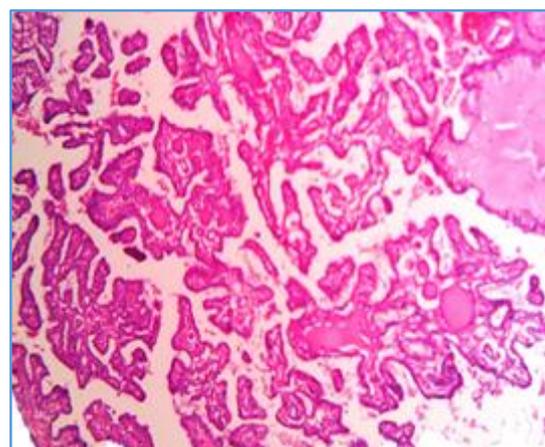


Figure 11: Scanner View of Papillary Carcinoma showing Papillary Architecture

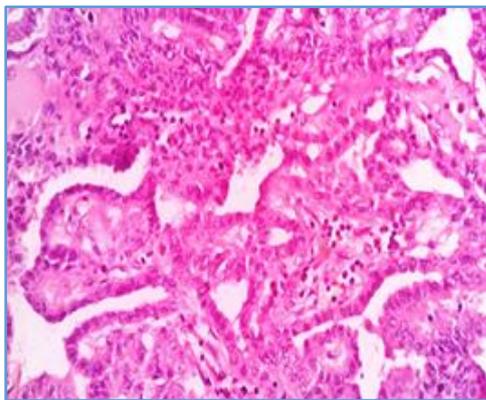


Figure 12: 10x view of PTC showing Papillae with Fibrovascular Core

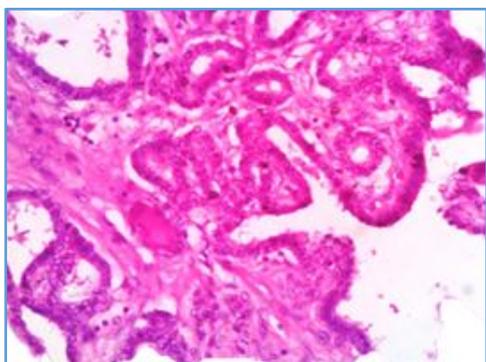


Figure 13: High power view showing Nuclear Overcrowding

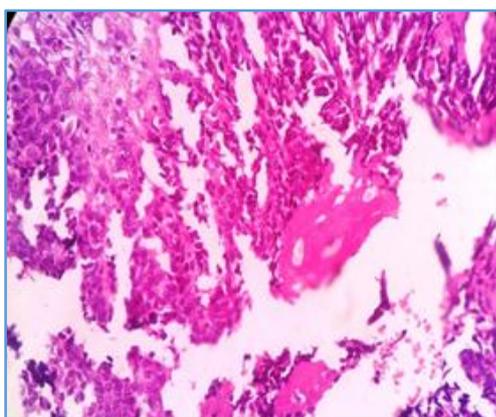


Figure 14: 10x view of Anaplastic Carcinoma

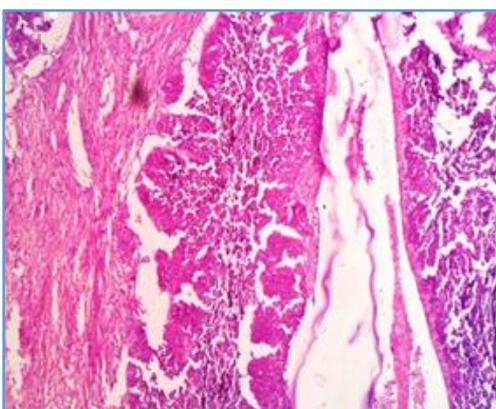


Figure 15: Scanner view of Anaplastic Carcinoma

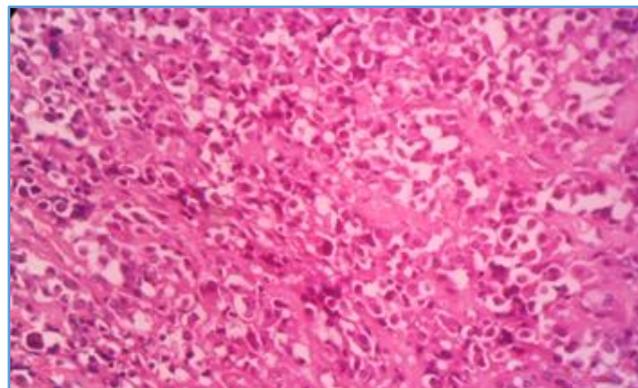


Figure 16: High Power view of Medullary Carcinoma

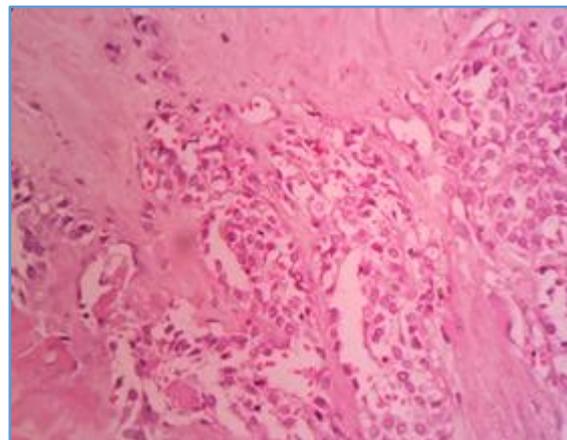


Figure 17: Scanner view of Medullary Carcinoma

DISCUSSION: Thyroid tumours are the most common endocrine tumours which affect females more frequently at age range of 30-60 yrs. most of which are benign. Malignant neoplasms of thyroid are not uncommon with follicular patterned lesions. Fine Needle Aspiration Biopsy in itself is not a reliable method to differentiate between benign and malignant follicular tumours. Surgical resection helps in accurate diagnosis of these malignancies.

Pathogenesis: The majority of thyroid carcinomas are derived from the follicular cell {Papillary, Follicular, Insular and undifferentiated (or anaplastic) thyroid carcinomas}, whereas medullary thyroid carcinoma is derived from calcitonin-producing cells. Aetiological factors like congenital hypothyroidism with dysmorphogenesis due to thyroperoxidase defect (TPO) is proved in follicular thyroid carcinoma (FTC).

Thyroid hemigenesis has the risk of cancer formation; thyroglossal duct cysts, simple goitre, thyroid cysts have lesser frequency of malignant transformation.⁽³⁾

The hereditary forms of thyroid carcinoma are less frequent than the sporadic type and are related to medullary thyroid carcinoma of C cell origin. It is transmitted as autosomal mode of inheritance as a part of either a MEN 2A or MEN 2B syndrome.⁽⁴⁾

Most common carcinoma in our study was papillary thyroid carcinoma.

Papillary carcinoma is recognised to have a delicate, often indented nuclear membrane and opaque, ground glass appearance-Lindsay 1960.

The concept that follicular cancers with clear nuclei represent papillary carcinomas has been generally accepted and has led to the awkward term 'follicular variant of papillary carcinoma'-Meissner 1983.

The two morphological features that best characterise typical papillary carcinomas are the papillae and the nuclear changes. Follicular variant "regardless of the follicle size, nuclei of the lining cells have features analogous to those of conventional papillary carcinoma-Rosai et al 1992. A malignant epithelial tumour showing evidence of follicular cell differentiation and characterised by distinctive nuclear features-WHO 2004.

Ret/PTC-1 alters nuclear envelope and chromatin structure to account for nuclear features of papillary carcinoma.⁽⁵⁾⁽⁶⁾⁽⁷⁾⁽⁸⁾⁽⁹⁾

IHC markers that help in the distinction between benign and malignant lesions are galectin-3, HBME-1, HMWCK, CK-19. Galectin-3 is a beta galactoside-binding polypeptide with a 31 KDa molecular weight. Its expression in PTC may promote the release of tumour cells resulting in metastasis, explain role of invasive and metastatic potential of PTC.⁽¹⁰⁾ HBME-1 demonstrates preferential reactivity in malignant thyroid tumours mostly in PTC and some follicular carcinoma. CK-19 has been found to be most useful with strong and diffuse positivity.⁽¹¹⁾

Metastasis: The most common metastatic site of angioinvasive differentiated thyroid carcinomas are lung, bone, brain and liver in the order of frequency among the histopathological parameters. Vascular invasion has been reported as an important and independent prognosticator in many thyroid cancers and more so in head and neck cancers in particular.⁽¹²⁾

Our study showed 69.27% goitres, 27.7% of solitary thyroid nodules, Papillary carcinoma of thyroid as predominant lesion in 83.3% of females. This was comparable with Handa and Garg.⁽¹³⁾

Our study was also comparable with Italian study which showed 68.75% benign and 31.25% of malignancy with PTC being most common.⁽¹⁴⁾

CONCLUSION: Out of the 148 cases, most common lesion among benign lesions was nodular hyperplasia (84 cases) and among malignant lesion was papillary carcinoma (25 cases). Early diagnosis by Fine Needle Aspiration and thorough sampling of thyroidectomies to rule out microcarcinomas will help in therapeutic management and prognosis.

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