



Histopathological Spectrum of Thyroid Malignancies

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Abstract

Introduction: Incidence and prevalence rates of Thyroid cancer are rising throughout the world. World Health Organisation classifies malignant Thyroid tumours into papillary, follicular and medullary carcinoma types, Papillary carcinoma being the commonest representing 60-70% of thyroid cancers. This study is aimed to study the demography of thyroid carcinoma among patients in coastal Andhra Pradesh.

Material and Methods: This study was conducted over a period of 24months(October2021-October2023) on thyroid malignancies.

Results: The study comprises of 65cases of thyroid malignancies of which 47 were female and 18 were male. Ages varied from 12-75years, with a mean age of 42years.

Thyroid carcinomas are most common in the age group 21-40 years (45%)of age with a female preponderance

(72% vs 28%). Histopathologically, papillary carcinoma was the commonest type (78%). Tumour size varied from 5mm to 75mm and majority appeared solid (46%).

Discussion: Peak incidence of thyroid carcinoma has been seen inpatients in 21-40years age group (45%) followed by 41-60years (34%) and 61-80years (14%) while the lowest incidence (11.9%) observed age group10-20 years. This study also revealed that the thyroid cancers are more frequent in women (72%) almost thrice the incidence rates found in men. Sex hormones have been implicated for this higher incidence among women in reproductive age but is still unclear. Histology classified the Thyroid cancers into Papillary (78%), Follicular (11%), Medullary (4%), Anaplastic (2%), Non-Hodgkin lymphoma (3%) and metastatic transition cell carcinoma deposits (2%). Grossly these tumours show solid component in majority (46%).

Conclusion: Papillary carcinoma thyroid is most common malignant tumour of thyroid gland majorly seen in women and age ranging of 21-40years in coastal Andhra Pradesh.

Keywords: Thyroid carcinomas Gross morphology Papillary carcinoma of thyroid Histopathology.

Introduction

Thyroid cancer incidence and prevalence rates are rising throughout the world. [1]

According to the World Health Organisation, malignant tumour of the thyroid are subdivided into epithelial and non-epithelial tumour, lymphomas, miscellaneous tumours, secondaries, unclassified tumours and tumour like conditions and epithelial tumours are further subclassified into papillary, follicular, medullary and anaplastic carcinomas.

Papillary carcinoma represents 70-80% of all thyroid cancers. [1]

This study is aimed to provide the present statistics on thyroid malignancies among patients and investigate the demography of the disease and stage of the disease on thyroid carcinoma registered at an oncology centre located in coastal area of A P state.

Material and Methods

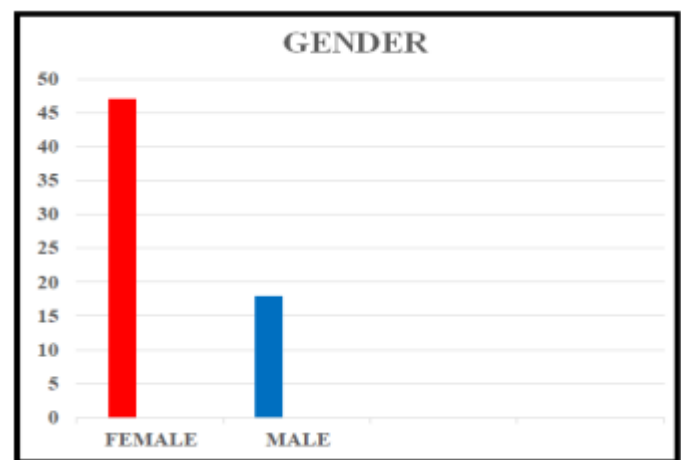
- This study was conducted on the specimens received over a period of 24 months (October2021-October2023)
- A total number of 65 specimens were received during the period of study and included in the study
- The specimens were processed as per the standard protocol.
- Immunohistochemistry (IHC) was done where ever it was required.
- The results were analysed based on the following parameters - age and sex incidence, gross features

and histopathological variants of thyroid malignancies.

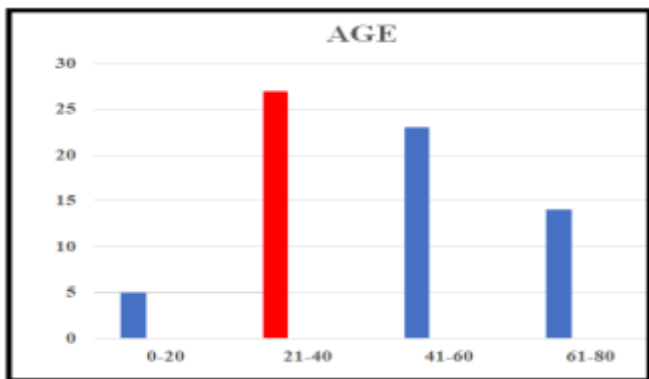
Results

- The study comprised of 65 cases of which 47 were females and 18 were males and ages varied from 12 to 75 years, the mean age being 42 years.
- Thyroid carcinomas are most commonly found in patients belonging to 21 to 40 years (45%) of age group. Majority were females (72%) and the remaining were males (28%).
- Histopathological examination of the tissue specimens shows that the commonest type of thyroid carcinoma was the papillary carcinoma (82%).
- Sizes of the tumour in the gland varying from 05 mm to 75 mm.
- The architecture of the tumour had solid, solid/cystic and cystic components and predominantly solid architecture was seen in 46% of cases followed by solid/cystic pattern in 41% of cases. The remaining (13%) had shown predominantly cystic appearance.

Gender and age distribution of carcinoma Thyroid

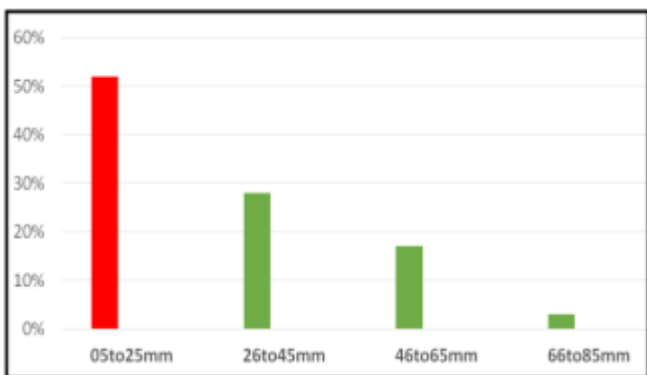


Graph 1:



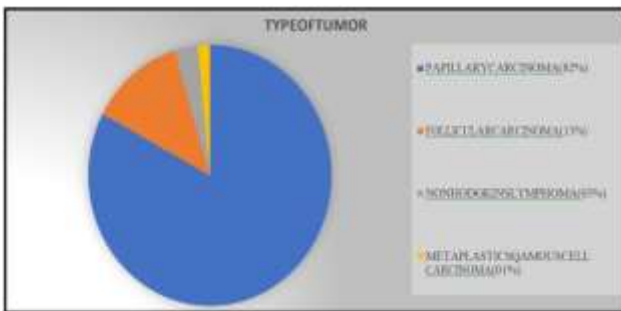
Graph 2:

Size distribution of thyroid tumors



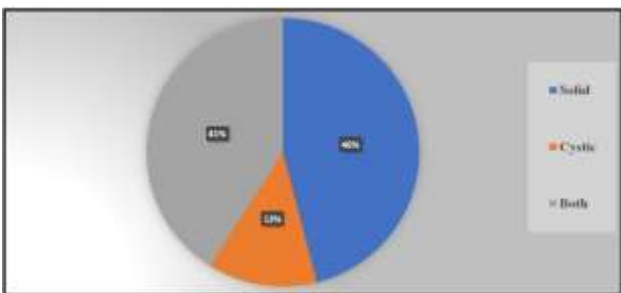
Graph 3:

Histopathology of thyroid malignancies



Graph 4:

Consistency of the thyroid tumors



Graph 5:

Gross morphology of papillary Carcinoma Thyroid



Fig1a: Total thyroidectomy specimen measuring 70x50x32mm. Right lobe measuring 45x23x17 mm and Left lobe measured 50x40x32mm. Isthmus measuring 18x17x05mm.



Fig1b: Left lobe show ednodular surface. Cut section left lobe shows a large solid/cystic tumour, cystic spaces filled with grey brown fluid/jelly like material. Solid area measured 34x30x32mm and showed granular cut surface

Gross morphology of follicular carcinoma Thyroid



Fig.2a: Total thyroidectomy specimen measured



Fig 2b: Left lobe measured 80x70x45mm. Cut section of left lobe showed well circumscribed grey white grey brown solid tumour measuring 55x50x42 mm with central hemorrhagic areas (White arrow). Right lobe measuring 35x12x10 mm. Cut section right lobe showed colloid with central grey white area. Isthmus measuring 22x06x04mm. Cut section isthmus appears normal.

Gross morphology of anaplastic Carcinoma Thyroid



Fig 3: Total thyroidectomy specimen measuring 80x50x40mm. Surface appears irregular and grey brown. Cut section shows firm grey white/grey yellow solid, nodular mass measuring 75x38x35mm.

Gross morphology of non-Hodgkin's Lymphoma Thyroid



Fig 4a: Total thyroidectomy specimen measuring 178x109x97mm. Right lobe enlarged (blue arrow) and measured 132x116x97mm.



Fig 4b: Cut surface shows a diffuse grey white firm mass (blue arrow) with focal brown areas (orange arrow).

Papillary carcinoma thyroid- Classic Variant

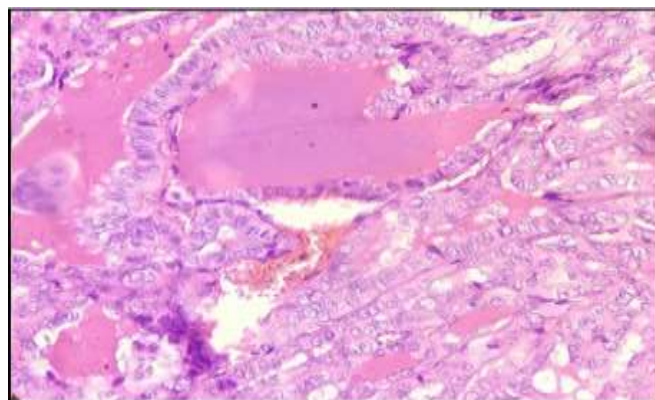


Fig 05: Section shows tumour composed of papillae and tubular structures lined by columnar cell that have round to oval nuclei showing clear nuclei and nuclear

overlapping and crowding. These cells have ample cytoplasm.

Tall columnar variant

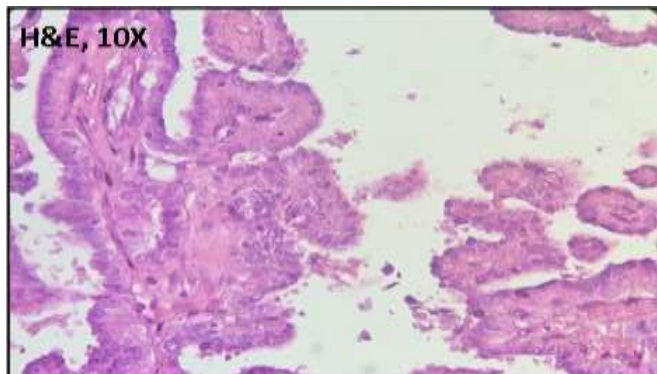


Fig 6 a: PTC-Tall columnar cell variant showing complex papillary structures lined by tall columnar cells

Papillary carcinoma with Solid and Follicular Pattern

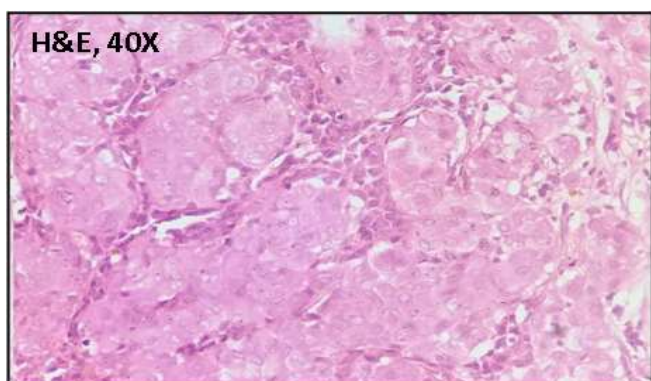


Fig 6b: PTC-Follicular variant made up of round to oval tumor cells arranged in solid lobules and follicles separated by fibrous septae and having scant eosinophilic cytoplasm and round to oval optically clear nuclei.

Follicular carcinoma thyroid

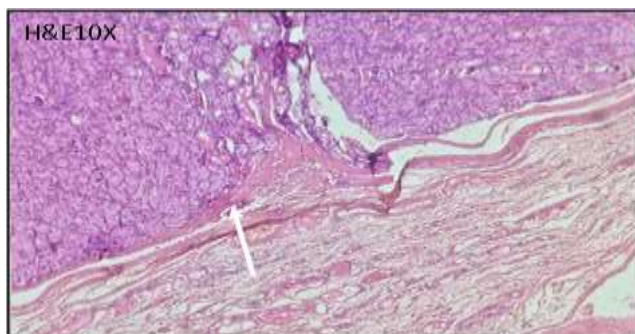


Fig 7a:

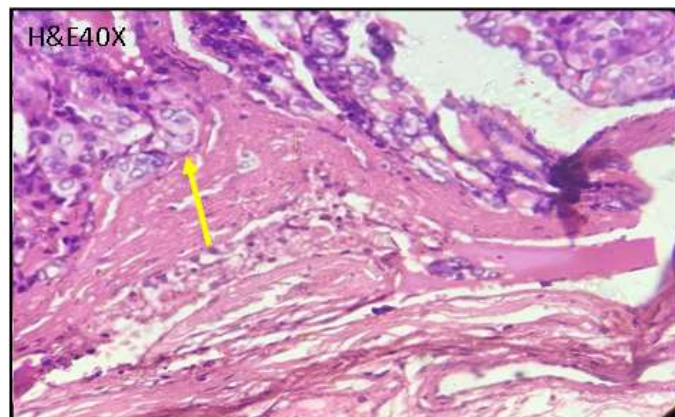


Figure 7 b:

Fig 7a, Fig 7b: Photomicrograph sections studied shows nodular tumours with irregular thick fibrous capsule (White arrow). The tumour is made of compactly arranged follicles, predominantly micro follicles, lined by cuboidal cells having high N/C ratio, fine granular chromatin and ample cytoplasm. The intervening stroma is thin fibro vascular with some dilated congested blood vessels seen. The tumour is separated into lobules by fibrous septa. There is capsular invasion at multiple foci (Yellow arrow).

An aplastic gaint cell variant

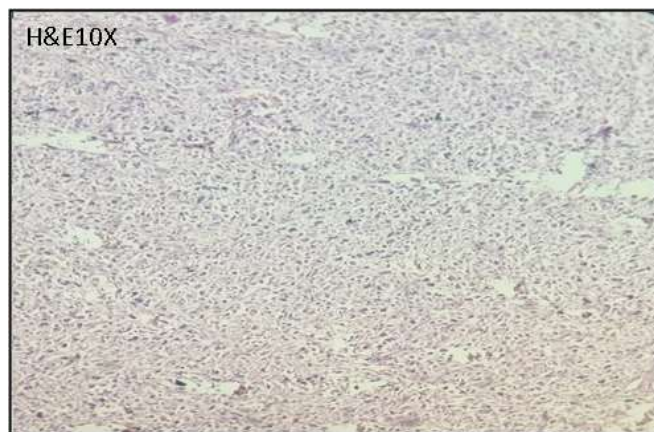


Fig 8a: Photo micro graph shows highly cellular infiltrating tumour arranged in diffuse sheets, loose clusters, nests, cords, chains and discreetly.

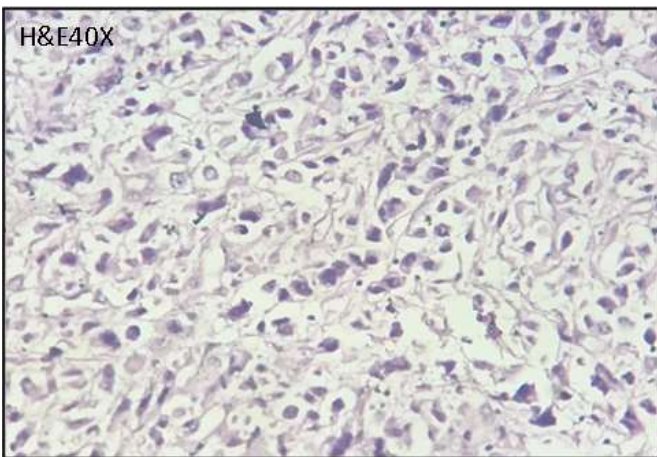


Fig 08 b: The tumour is made of large oval, round, polygonal and spindle cells having scant to fair amount of eosinophilic vacuolated cytoplasm exhibiting highly pleomorphic hyperchromatic/vesicular nuclei with prominent nucleoli. Many bizarre cells are seen. Mitosis seen (2 to 3 per HPF)

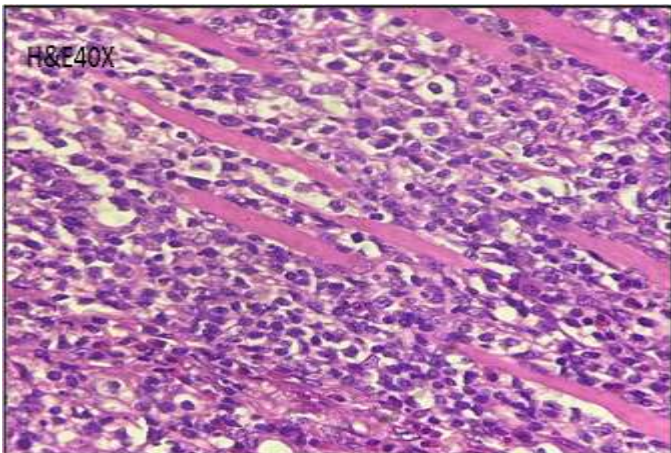


Fig 9: High power (40x)- Shows a tumour composed of cells arranged in vague lobular pattern, sheets infiltrating the strap muscles of thyroid. The cells are round to oval having pleomorphic hyperchromatic nuclei, prominent nucleoli with irregular nuclear margin and ample eosinophilic cytoplasm.

Immunohistochemistry for non-Hodgkin's lymphoma of thyroid

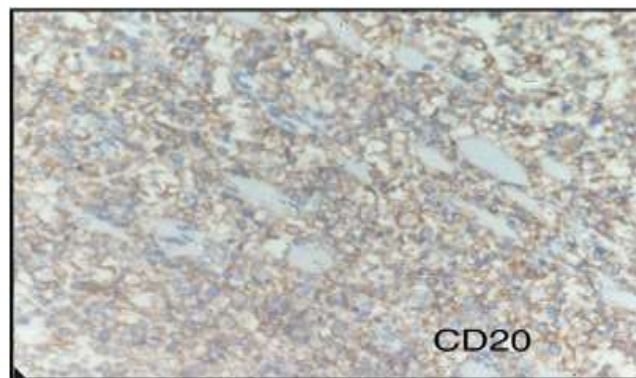


Figure 10: CD 20 Positivity

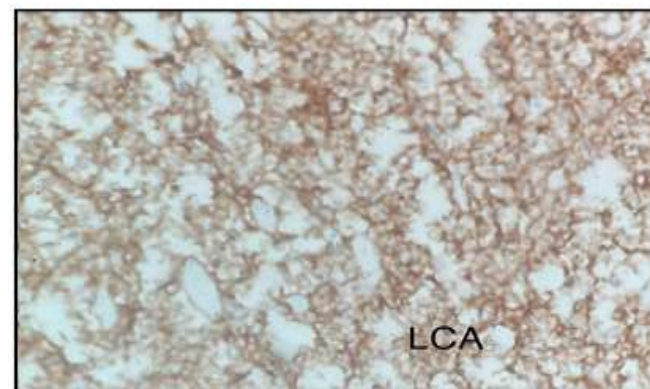


Figure 11: LCA Positivity

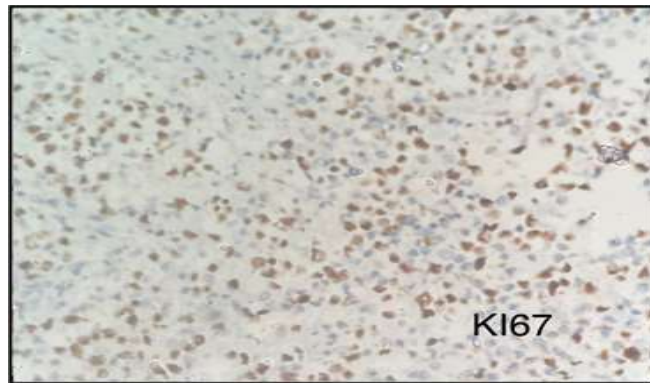


Figure 12: KI 67 Positivity

Discussion

Statistics place thyroid cancer as the 5th most common malignancy in women and until recently it was the fastest growing cancer in the developing countries. Despite its relative high incidence, most cases of thyroid cancer are curable and its death rate is in single digits.[5] Currently, the gold standard for the diagnosis of thyroid cancer is histopathologic evaluation and interpretation of

thyroid resection specimens.[5] Papillary carcinoma is the most common malignant tumor of thyroid gland and comprises about 80–85% of thyroid malignancies.[2] Thyroid cancer has no established etiologic factors, although exposure to radiation has been implicated for several decades. [3] Thyroid cancer is most frequently encountered in younger age groups with the highest incidence in the second, third, and fourth decades of life. [3] Most of these tumors will be composed predominantly or focally of papillary areas. A large number will contain follicular areas as well. (The presence of follicles does not indicate follicular variant of papillary carcinoma). The tumor cells are usually cuboidal or columnar. [4] In our study, peak incidence of thyroid carcinoma has been seen in patients between 21-40 years of age (45%) followed by (34%) of total cases in patients between 41-60 years of age and (14%) of cases in patients between 61-80 years while the lowest incidence rate (11.9%) in age group of 10-20 years. This study also reveals the thyroid cancers are frequently detected in women representing for about 72% of all cases indicating almost thrice the incidence rates than in men. The cause might be the hormone responsible in reproductive age which is still unclear. Gross appearance of thyroidectomy specimen revealed tumor of solid consistency (46%) in majority of the cases in this study followed by solid and cystic consistency (41%). Papillary carcinoma is the most common malignant tumor of the thyroid malignancies comprises about 82% in this study that can occur at any age. But most commonly seen in younger age group of 21-40 years of age with excellent prognosis.

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4. TY - JOURAU - LiVolsi, Virginia APY - 2011DA - 2011/04/01TI - Papillary thyroidcarcinoma: an updateJO - Modern PathologySP - S1EP - S9VL - 24IS - 2AB - The past twodecades have seen numerous developments in the understanding of the origins and biology ofpapillary thyroid carcinoma. Advances in molecular biology, clinicopathologic studies of newentities, facility with fine-needle aspiration biopsy, and new radiologic imaging techniques haveallowed for earlier diagnosis of these tumors. However, these advances have also causedcontroversies in cytologic and histopathologic diagnoses as well as therapy decisions. This paperwill focus on several pathologic aspects of papillary carcinoma, which impact on its biology andprognosis.SN - 1530-0285UR - https://doi.org/10.1038/modpathol.2010.129DO - 10.1038/modpathol.2010.129ID - LiVolsi2011ER
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