

HISTOPATHOLOGICAL SPECTRUM OF THYROID LESIONS AND ITS CORRELATION WITH BIOCHEMICAL AND RADIOLOGICAL FINDINGS-STUDY 100 CASES

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ABSTRACT

Objective: The objective of the study was to study the correlation of histopathological findings of thyroid lesions and establish its correlation with biochemical and radiological findings.

Methods: The present study was a prospective study conducted in the Department of Pathology, Government Medical College and Rajindra Hospital Patiala, Punjab. 100 cases were included in the present study.

Results: Out of 100 cases studied, 87 cases were euthyroid, 8 were hypothyroid, and 5 were hyperthyroid. On USG, 50 thyroid lesions were mixed echoic, 26 were isoechoic, 10 were hyperechoic, and 14 were hypoechoic. Majority of hypoechoic lesions were diagnosed as malignant histopathologically.

Conclusion: Histopathology is gold standard. Combined opinion on the nature of a thyroid lesion should be done based on clinical findings, ultrasound findings.

Keywords: usg ultrasound, Hypoechoic isoechoic

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INTRODUCTION

Thyroid diseases comprise one of the most common endocrine abnormality in India and worldwide second only to diabetes and are one of the common problems encountered in clinical practice [1,2]. India owns the largest goiter belt in the sub Himalayan region [1]. Thyroid swellings are frequent and occur in population aged between 30 and 60 years [3]. An excellent screening test for all patients with a thyroid lesion is serum TSH level. Assuming no pituitary dysfunction or an acute illness, this sensitive assay will determine whether a patient is euthyroid, hyperthyroid, or hypothyroid. Following initial evaluation, the use of selected radiographic studies can be helpful in managing thyroid masses. Specifically, thyroid ultrasound (US) is an invaluable instrument in evaluating thyroid nodular disease and provides information that may suggest malignancy or benign disease [4]. Hence, to classify histopathological spectrum of thyroid lesions and to establish the correlation of radiological and biochemical findings of various thyroid lesions this present study of 100 thyroidectomy cases was done at GMC Patiala.

METHODS

The present study was a prospective study conducted in the Department of Pathology, Government Medical College and Rajindra Hospital Patiala, Punjab. 100 cases were included in the present study as per inclusion criteria.

And these specimens were processed to make paraffin embedded tissue blocks and sectioned. All sections were stained with Hematoxylin and Eosin. The slides thoroughly examined microscopically. The thyroid neoplasms were classified according to the WHO classification and results interpreted and correlated with the radiological (USG) and biochemical findings.

OBSERVATIONS

The present study was a prospective study carried out in the Department of Pathology, 100 specimens of thyroid lesions were studied and analyzed for correlation with USG findings and thyroid hormone profile and histopathologically. The youngest patient in the study was 16 years old, while the oldest patient was 81 years old. Maximum number of

cases, that is, 46 (46%) was observed in the age group of 21–40 years. The mean age was 41.8 ± 13.37 years. In the present study, majority of the patients were females (83 out of 100=83%) when compared to males (17 out of 100=17%). Male to female ratio was 1:4.8. Majority of the cases (87%) were found to be euthyroid followed by hypothyroid (08%) and hyperthyroid (05%). Majority of the thyroid lesions (50%) were found to be mixed echoic. Majority of the euthyroid, hypothyroid and hyperthyroid cases were non neoplastic which was 62, 06, and 04 cases, respectively. Fisher's exact test was performed to see the association between thyroid hormone profile and histopathological diagnosis and it was found to be insignificant as p value calculated was >0.05 . Majority of mixed echoic lesions (32%) were diagnosed histopathologically as nodular goiter. On histopathology, the majority of isoechoic lesions were diagnosed as nodular goiter (8%). Maximum number of hypoechoic lesions (10%) was found to be malignant histopathologically. Majority of hyperechoic lesions (06%) were diagnosed histopathologically as nodular goiter.

DISCUSSION

Procedures such as biochemical evaluation and ultrasonography have greater limitations since these tests will not differentiate benign and malignant thyroid nodules. However, the histopathological evaluation remains the gold standard for the diagnosis of the disease. Hence, the objective of the present study was to compare biochemical and radiological findings with histopathological findings and diagnosis.

Age wise distribution of the study population

In the present study, the most common age group presenting with thyroid lesions was between 20 and 40 years of age and the mean age was 41.8 ± 13.37 years. This is probably because, most of malignant and benign lesions are common in these age group. So the load of thyroid lesions is tilted towards this age group. The comparison of age distribution with other studies is shown in Table 1.

Gender wise distribution of the study population

The number of males in the present study was 17 (17%) and the females were 83 (83%) with a female to male ratio of 4.8:1. It might be due to

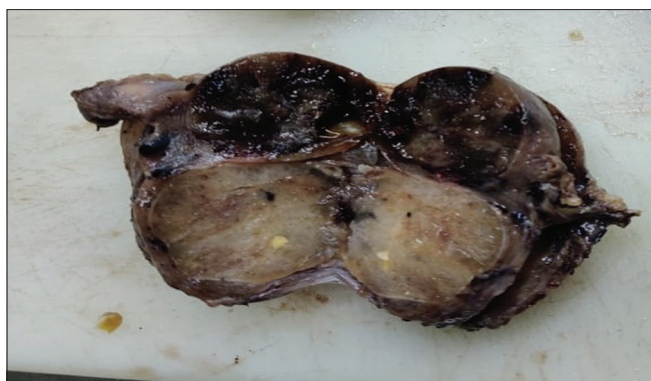


Fig. 1: Gross specimen of follicular adenoma. Cut surface shows encapsulated, well circumscribed homogenous grey white lesion with areas of hemorrhage



Fig. 2: Gross specimen of Multinodular goitre. Thyroid appears asymmetrically enlarged. Cut surface shows solid, cystic, and hemorrhagic areas

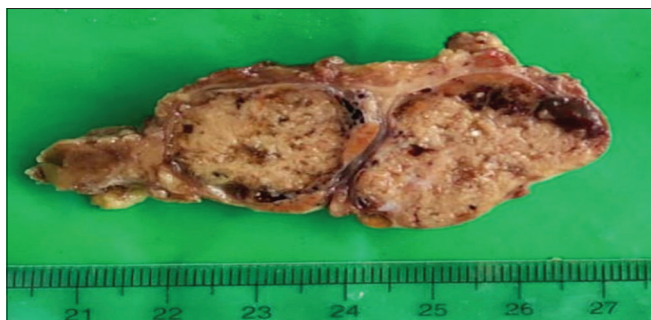


Fig. 3: Gross specimen of papillary carcinoma thyroid. Cut section shows grey brown tumor with the presence of papillary excrescences

the fact that thyroid disorders are female prone due to the presence of estrogen receptor in the thyroid tissue. The comparison of the gender distribution with studies done by the other authors is shown in Table 2.

Thyroid hormone profile

In the present study, thyroid hormone profile was done in all the 100 cases and maximum euthyroid (5%) followed by the hypothyroid (8%) and hyperthyroid (5%).

Thyroid hormone profile	Present study	Warpe et al. [8]	Kartha et al. [9]
Euthyroid	87.00%	85.07%	63.7%
Hypothyroid	08.00%	5.43%	33.4%
Hyperthyroid	05.00%	9.5%	2.9%

Table 1: Comparison of age wise distribution with other studies

Study	Mean age (in years)
Nggada et al. [5]	40.7
Turkey and Mahadani [6]	43.05
Present study	41.8 years

Table 2: Comparison of gender wise distribution with other studies

Study	F:M
Nggada et al. [5]	6:1
Garalla and Gheryani [7]	8:1
Present study	4.8:1

Table 3: Distribution according to USG diagnosis of thyroid lesions

USG diagnosis of thyroid lesions	Present study (%)	Warpe et al. [8]	Hathila et al. [10]
Nodular goitre	32	56.27	45.24
Benign lesion	29	26.78	34.52
Cystic lesion	10	3.05	8.33
Thyroiditis	04	9.83	9.52
Suspicious for malignancy	13	0.34	-
Malignant	12	3.73	2.38

Table 4: Comparison of histopathological diagnosis of thyroid lesions with other studies

Study	Histopathological diagnosis of thyroid lesions	
	Non neoplastic	Neoplastic
Beigh et al. [11]	27.66	72.34
Modi and Daveswar [12]	54	44
Fatima et al. [13]	83.33	16.67
Present study	72	28

USG diagnosis

In the present study, USG was done in all 100 cases and majority of the lesions were diagnosed as nodular goiter ultrasonographically. This was comparable with the studies done by other authors as shown in Table 3.

The US findings like shape of the lesions, well or ill-define margin, echogenicity of the lesions and composition of lesions gives idea about the type of lesion. Ill-define margin, hypoechogenicity, and irregular shape are specific findings for malignancy lesions.

Histopathological diagnosis

In the present study, out of 100 cases, 72% cases were non neoplastic lesions and 28% were neoplastic lesions histopathologically when compared with other studies as in Table 4

Thus, it was found from the present study that the diagnostic parameters were thus better on radio-histopathological correlation than on biochemical-histopathological correlation.

CONCLUSION

A total of 100 cases of thyroid lesions were evaluated in the Department of Pathology, Government Medical College and Rajindra Hospital Patiala, Punjab with respect to age, sex, investigated with thyroid hormone profile and USG thyroid. The results of thyroid hormone profile and USG

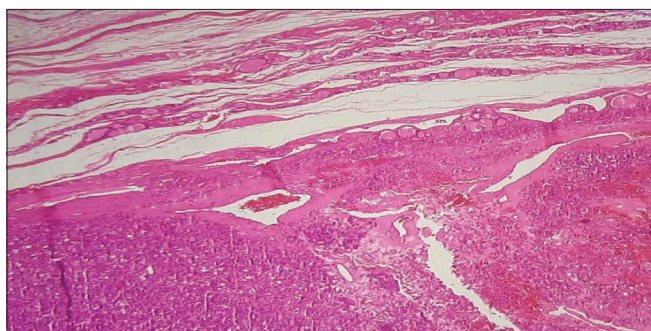


Fig. 4: Follicular adenoma: Section show tumour surrounded by intact fibrous capsule (H&E; 100×)

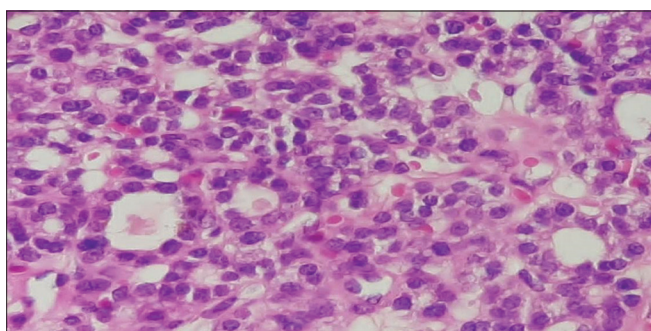


Fig. 5: Follicular adenoma: Section show tumor composed of small to medium sized follicles lined by cuboidal cells with regular round nuclei (H&E; 400×)

were compared with histopathology. Maximum number of cases, that is, 46 (46%) were observed in the age group of 21–40 years. Mean age was found to be 41.8 ± 13.37 years. Majority of the patients were females, that is, 83 (83 %) and 17 were males. Male to female ratio was 1:4.8.

87 cases were euthyroid, 8 were hypothyroid, and 5 were hyperthyroid. On USG, 50 thyroid lesions were mixed echoic, 26 were isoechoic, 10 were hyperechoic, and 14 were hypoechoic. Majority of hypoechoic lesions were diagnosed as malignant histopathologically.

The maximum number of thyroid cases investigated on USG was diagnosed as nodular goiter accounting for 32% of cases. On histopathology, 72 cases were non neoplastic thyroid lesions and 28 were neoplastic thyroid lesions. The most common non-neoplastic lesion was nodular goiter (47%) and the most common malignant lesion was papillary carcinoma accounting for 14% of thyroid lesion.

USG showed sensitivity of 87.5%, specificity of 86.9%, positive predictive value of 56%, and negative predictive value of 97.3% in the diagnosis of thyroid lesions when compared with histopathology which was considered as gold standard. Figs. 1-5 shows histopathology images of few of these cases.

CONFLICT OF INTEREST

None.

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