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Clinicopathological Analysis of Papillary Thyroid Carcinoma

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Abstract: Thyroid cancer is the most prevalent type of malignancy. The present study was conducted to assess clinical and pathological features of papillary thyroid carcinomas. The present study was conducted on 520 specimens submitted to the department. All slides were reviewed and given the WHO classification of thyroid tumors, each case was reassigned accordingly. Clinical features were also recorded. Males were 280 and females were 240. The difference was non- significant (P> 0.05). <20 years had 90 cases, 20-40 years had 190 cases, 4060 years had 160 cases and >60 years had 80 cases. Common clinical findings in patients were neck mass (90%), dysphagia (42%), dysphonia (25%), weight loss (18%), lymphadenopathy (12%) and hyperthyroidism (7%). Metastatic type of PTC was seen in 220 cases and non-metastatic type in 300 cases. Maximum cases were seen in age group 20-40 years. Males showed higher prevalence than females.
Keywords: Dysphagia, Hyperthyroidism, Papillary thyroid carcinomas.

INTRODUCTION

Thyroid cancer is the most prevalent type of malignancy. Epidemiological studies have reported a progressive increase in the overall incidence over the past 20 years. The incidence of thyroid cancer is subject to ethnic and geographical variation. The highest incidence rates are reported in areas of high iodine intake; however, there is no general consensus on these findings [1].

The overall incidence of differentiated thyroid carcinoma is not thought to be influenced by iodine intake in a population, whereas the distribution of the types of thyroid carcinoma seems to be related to the intake of iodine, with fewer of the more aggressive follicular and anaplastic carcinomas and more PTC (papillary thyroid carcinomas) being observed in iodine-rich areas. Papillary thyroid carcinoma (PTC) accounts for more than 80% of all thyroid cancers and for 95% of this increase [2].

TC may produce a wide range of clinical presentations, from highly differentiated carcinoma with a good prognosis to undifferentiated anaplastic cancers that occur mainly in older people and have a poor prognosis. Many histopathologic variants of papillary carcinoma have been recognized, few of these are of prognostic significance [3].

PTC is associated with constitutive activation of the RET-RAS-RAF-MAPK pathway which transduces potent mitogenic and cell survival signals. Pathway activation is usually caused by RET/PTC gene rearrangements or activating point mutations in the BRAF or RAS-family genes [4]. The present study was conducted to assess clinical and pathological features of papillary thyroid carcinomas.

MATERIALS & METHODS

The present study was conducted to in the department of general pathology. It comprised of 520 specimens submitted to the department. The study was approved from institutional ethical committee. All slides were reviewed and given the WHO classification of thyroid tumors, each case was reassigned accordingly. The patient information such as name, age, gender etc. was retrieved from case history performa. Clinical features were also recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

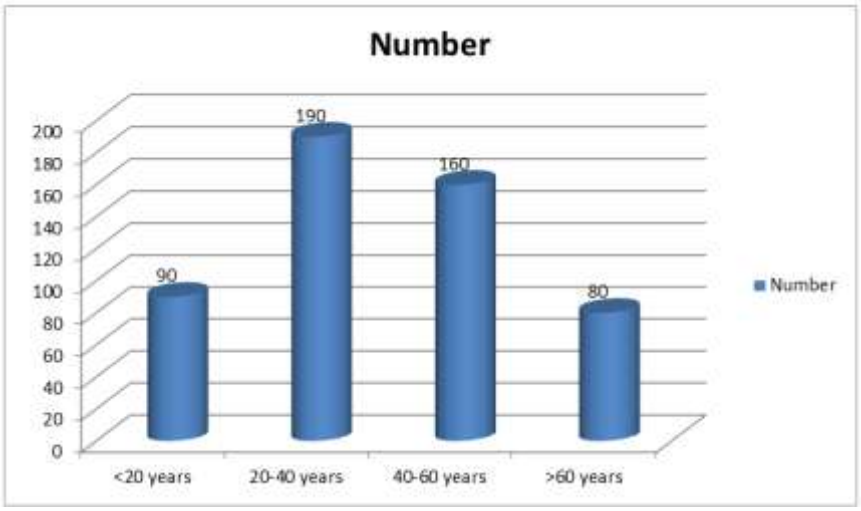
Table-1: Distribution of patients

Total- 520		
Males	**Females**	**P value**
280	240	0.5

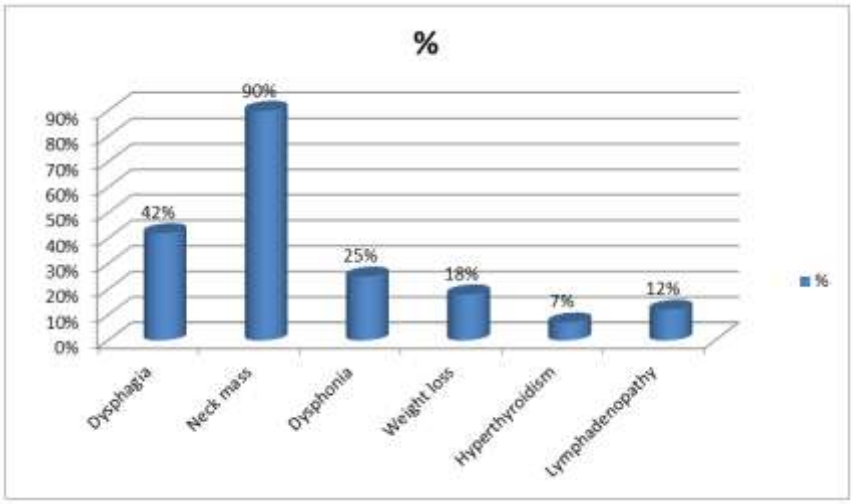
Table-1 shows that males were 280 and females were 240. The difference was non- significant (P> 0.05).

Graph-1 shows that <20 years had 90 cases, 20-40 years had 190 cases, 4060 years had 160 cases and >60 years had 80 cases. The difference was significant (P< 0.05).

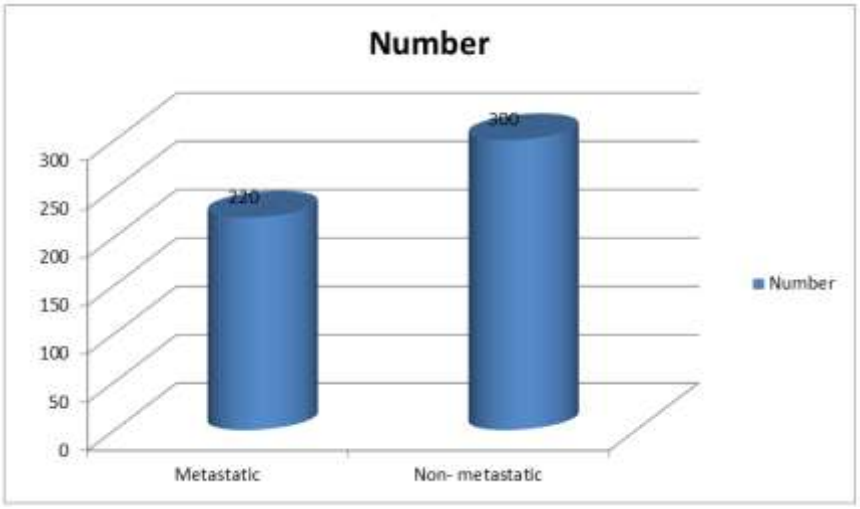
Graph-2 shows that common clinical findings in patients were neck mass (90%), dysphagia (42%), dysphonia (25%), weight loss (18%), lymphadenopathy (12%) and hyperthyroidism (7%). The difference was significant (P< 0.05).



Graph-1: Age wise distribution of cases



Graph-2: Clinical features in patients



Graph-3: Prevalence of metastasis by histologic type

Graph-3 shows that metastatic type of PTC was seen in 220 cases and non- metastatic type in 300 cases. The difference was non- significant (P> 0.05).

DISCUSSION

PTC is the most common malignant tumor among all thyroid cancers, comprising an estimated 80% of thyroid cancers. Papillary carcinoma is a malignant epithelial tumor showing follicular cell differentiation and characterized by distinctive nuclear features. Radiation exposure is one of the well‑known risk factors for PTC. Other risk factors include genetic factors, preexisting nodular disease, and association with genetic syndromes such as familial adenomatous polyposis syndrome [5].

In present study, males were 280 and females were 240. Rearrangements involving the RET gene, referred to as RET/PTC, are detected in approximately 20% of PTC in adults, in 40-70% of childhood and adolescent patients with sporadic PTC and 50-86% in radiation exposed individuals. To date 17 different RET/PTC variants have been described among which RET/PTC1 and RET/PTC3 account for 90-100% in different series. The presence of RET/PTC rearrangement correlates with some clinicopathological features of PTC such as younger age of patients, tumor morphology and a higher probability of lymph node involvement [6].

We observed that <20 years had 90 cases, 20-40 years had 190 cases, 4060 years had 160 cases and >60 years had 80 cases. We found that common clinical findings in patients were neck mass (90%), dysphagia (42%), dysphonia (25%), weight loss (18%), lymphadenopathy (12%) and hyperthyroidism (7%). This is in agreement with Ain *et al*., [7].

Mast *et al.*, [8] retrieved the medical records of 1177 confirmed cases of thyroid cancer treated over a 15-year period. The female/male ratio was 1.8/1. Mean age was 42.89/0.9 years, male patients being significantly older. The most common clinical presentation was a central neck mass; 28.6% of the tumors had metastasized, usually to the cervical lymph nodes, by the time the patient presented with disease. The mean size of non-metastatic tumors was 5.0 cm at their longest diameter. The distribution of tumors in our study did not reflect the expectations for an iodine-deficient area, where follicular thyroid carcinoma is common, but rather what is seen in iodine-rich areas. Papillary and follicular types accounted for 79.7% and 8.8% of cases, respectively.

Papillary carcinomas are diagnosed by the characteristic nuclear features. These include optically clear nuclei also known as “orphan annie” nuclei, nuclear grooves, intranuclear inclusions, and nuclear overcrowding. These features are enough to suggest papillary carcinoma even if the papillary pattern is absent in the tumor. In our study, all classic variants and one case of columnar and oncocytic variant showed arborizing papillary processes with fibrovascular core.

PTC formed the predominant type of malignancy accounting to 71% of the total cases. Of these, about 75% of patients were in the second to fifth decade [9]. Male to female ratio was 1:5.4. Other than the usual classic variant and follicular variant, we also found rare types such as clear cell variant, tall cell type, oncocytic type, and macrofollicular variant. Microscopically, nuclear overcrowding and ground glass nuclei were seen in more than 90% of cases. Nodular goiter, Hashimoto’s thyroiditis, and follicular adenoma were associated lesions in some cases.

CONCLUSION

Maximum cases were seen in age group 20-40 years. Males showed higher prevalence than females.

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