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ORIGINAL ARTICLE

Evaluation of Immunohistochemistry of Thyroid Carcinoma

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***ABSTRACT*:**
Background: Thyroid cancer begins in the follicular cell of the thyroid gland. The present study was conducted to assess immunohistochemistry of thyroid carcinoma. **Materials & Methods:** The present study was conducted on 62 specimens of throid. Hematoxylin- and eosin-stained sections were classified into three groups. 40 were of WDT-UMP (Group 1), 14 cases were of PTC, and 8 cases were of FVPTC. With 40X objective lenses, >10% positive follicular cells showed membranous and cytoplasmic staining was considered positive for CD56 and CK19, as well as >10% of the nuclear staining of the follicular cells were considered positive for P63. **Results:** Out of 62 specimens, 24 were of males and 38 were of females. 7 cases of WDT-UMP, 8 of PTC and 10 of FVPTC were positive of CD56, 42 of WDT- UMP, 45 of PTC and 38 of FVPTC were p63 positive and 30 WDT- UMP, 34 of PTC and 42 of FVPTC were CK 19 positive. The mean nuclear area in WDT-UMP was 48.1, PTC was 52.4 and FVPTC was 50.6. Mean nuclear perimeter in WDT-UMP was 28.3, PTC was 28.5 and FVPTC was 29.6. The difference was non- significant (P> 0.05). **Conclusion:** Authors found that WDT-UMP are intermediate lesions seen in thyroid specimens.
Key words: Thyroid, CD56, WDT- UMP.

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INTRODUCTION

Thyroid cancer begins in the follicular cell of the thyroid gland. There are 2 types of cells located within the thyroid parenchyma: the follicular cells and the supporting cells (also called the C cells). Cancers derived from follicular cells are generally differentiated thyroid carcinomas (DTC). Although these cancers are not usually aggressive, they can eventually mutate into more aggressive variants.[1]

Approximately 85% of patients present with DTC, and they have an excellent prognosis following treatment. Between 10% and 15% of tumors will mutate into more aggressive variants of thyroid carcinoma. These tumors may present with tall-cell features or as tall-cell thyroid carcinoma, and they have a biologic behavior that requires more aggressive surgical intervention and adjuvant therapy. Notably, these patients could be candidates for novel therapies if their disease is unresectable or refractory to radioactive iodine (RAI).[2]

Studies stated that regardless of whether or not the tumor has an invasive capsule or a papillary growth pattern, PTC-type nuclear features are the most accepted morphological features in the diagnosis of PTC, which include nuclear enlargement, nuclear overlapping, nuclear clearing, nuclear grooving, and cytoplasmic pseudoinclusions.[2]

In follicular-patterned tumor, when PTC nuclear features were ambiguous, such as only nuclear clearing and nuclear grooving without nuclear pseudoinclusions, thyroid lesions will be classified as WDT-UMP. When PTC nuclear features were seen in the entire part of the tumor the diagnosis will be encapsulated follicular variant papillary thyroid carcinoma (FVPTC). When unequivocal PTC nuclear features were found in only part of the tumor, it will be classified as WDT-UMP.[4] The present study was conducted to assess immunohistochemistry of thyroid carcinoma.

MATERIALS & METHODS

The present study was conducted in the department of General pathology. It comprised of 62 specimens of thyroid obtained in the department. Hematoxylin- and eosin-stained sections were classified into three groups. 40 were of WDT-UMP (Group 1), 14 cases were of PTC, and 8 cases were of FVPTC.

Representative tissue sections were deparaffinized in xylene, rehydrated in descending alcohol grades, and then incubated with the primary antibodies of CK19, CD56, and P63 in dilutions. Visualization was obtained by streptavidin-biotin ABC detection kit. With 40X objective lenses, >10% positive follicular cells showed membranous and cytoplasmic staining was considered positive for CD56 and CK19, as well as >10% of the nuclear staining of the follicular cells were considered positive for P63. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant (P< 0.05).

RESULTS

Table I Distribution of specimens based on gender

Total- 62		
Gender	**Males**	**Females**
Number	24	38

Table I, graph I shows that out of 62 specimens, 24 were of males and 38 were of females.

Graph I Distribution of specimens based on gender

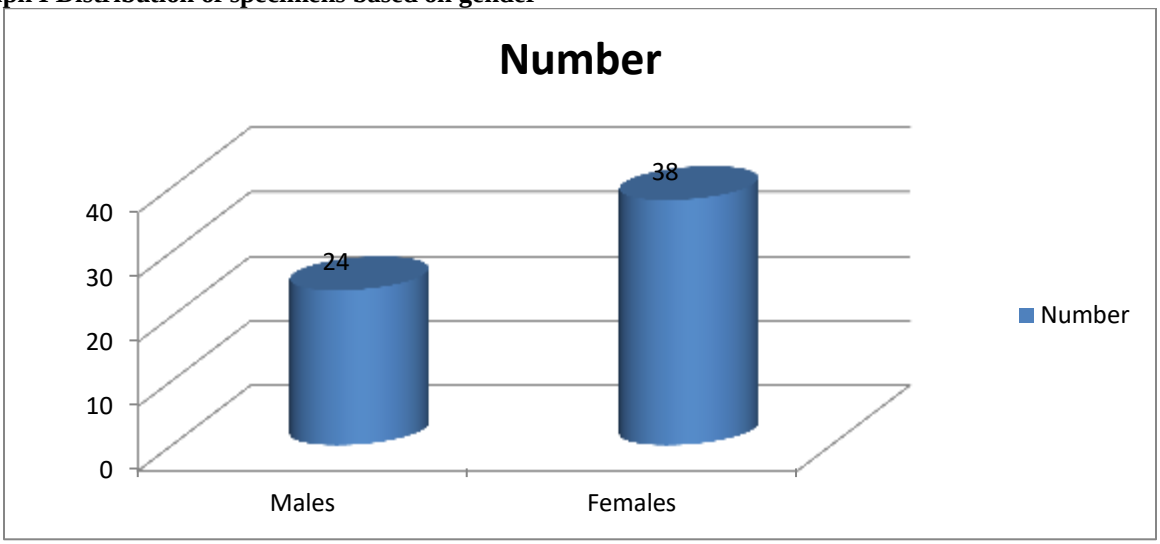


Table II Results of CD56, P63 and CK19 in groups

Parameters	WDT-UMP	PTC	FVPTC
CD56 positive	7	8	10
P63 positive	42	45	38
CK 19 positive	30	34	42

Table II, graph II shows that 7 cases of WDT- UMP, 8 of PTC and 10 of FVPTC were positive of CD56, 42 of WDT- UMP, 45 of PTC and 38 of FVPTC were p63 positive and 30 WDT- UMP, 34 of PTC and 42 of FVPTC were CK 19 positive.

Graph II Results of CD56, P63 and CK19 in groups

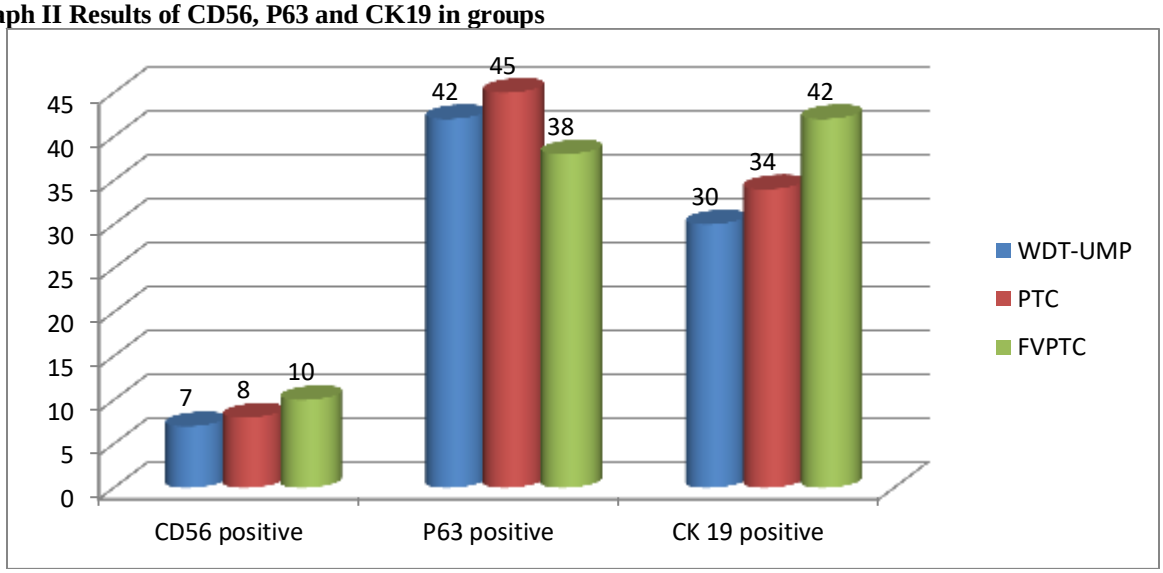
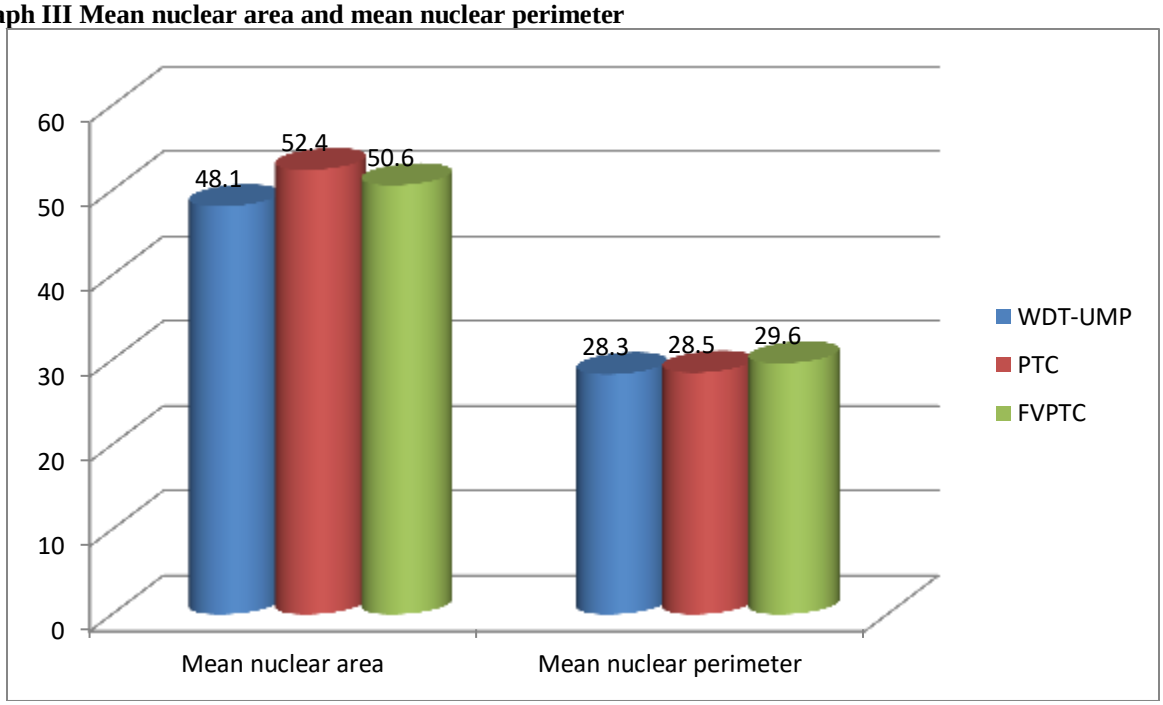


Table III Mean nuclear area and mean nuclear perimeter results in groups

Parameters	WDT-UMP	PTC	FVPTC	P value
Mean nuclear area	48.1	52.4	50.6	0.12
Mean nuclear perimeter	28.3	28.5	29.6	0.15

Table III, graph III shows that mean nuclear area in WDT-UMP was 48.1, PTC was 52.4 and FVPTC was 50.6. Mean nuclear perimeter in WDT-UMP was 28.3, PTC was 28.5 and FVPTC was 29.6. The difference was non-significant (P> 0.05).

Graph III Mean nuclear area and mean nuclear perimeter



DISCUSSION

Thyroid cancer has no established etiologic factors, although exposure to radiation has been implicated for several decades. The phenomenon of radiation exposure leading to increased incidence of thyroid cancer was documented following the atomic bomb exposure in Hiroshima and Nagasaki during World War II. More recently, it was shown after the Chernobyl accident, which was followed by a steep rise in thyroid cancer among children exposed to the radiation fallout.[5] There is evidence that exposure to low-dose radiation during childhood (such as in patients receiving therapeutic radiation for leukemia/lymphoma) is associated with an increased incidence of thyroid cancer. There is also evidence to show an increased risk of thyroid cancer in children treated with low-voltage radiation for acne.[6] Although the incidence of thyroid cancer is higher after radiation exposure, the biological behavior of the disease is similar in both radiation-exposed and non radiation-induced thyroid cancer. Thyroid cancer is most frequently encountered in younger age groups. Across the literature, age at onset appears as a bell-shaped curve, with the highest incidence in the second, third, and fourth decades of life. Within the past 2 decades, however, there has been a rise in the incidence of thyroid cancer during the fourth and fifth decades of life.[7] The present study was conducted to assess immunohistochemistry of thyroid carcinoma.

In present study, out of 62 specimens, 24 were of males and 38 were of females. We found that 7 cases of WDT- UMP, 8 of PTC and 10 of FVPTC were positive of CD56, 42 of WDT- UMP, 45 of PTC and 38 of FVPTC were p63 positive and 30 WDT- UMP, 34 of PTC and 42 of FVPTC were CK 19 positive.

Kang et al[8] conducted a study to categorize WDT-UMP using combined nuclear morphometry and immunohistochemistry of CD56, P63, and CK19 and found that significant differences were obtained between WDT-UMP and benign group according to the three markers, but no significant difference between WDT-UMP and malignant group. The mean nuclear area and mean nuclear perimeter were significantly higher in WDT-UMP group in comparison with the benign group while there were no significant differences with the malignant group.

We observed that mean nuclear area in WDT-UMP was 48.1, PTC was 52.4 and FVPTC was 50.6. Mean nuclear perimeter in WDT-UMP was 28.3, PTC was 28.5 and FVPTC was 29.6. The difference was non-significant (P> 0.05). Kim et al[9] reported that P63 was detected in 12.5% of PTC, 11.1% of poorly differentiated carcinomas, and 71.4% of anaplastic carcinomas, while normal thyroid follicles, hyperplastic thyroid follicles, follicular carcinomas, and medullary carcinomas showed negative expressions for P63. They concluded that P63 showed a late expression in the course of thyroid tumor progression.

The identification of prognostic factors led to the development of risk group stratification, which categorizes patients into low-risk, intermediate-risk, and high-risk groups. This stratification allows clinicians to tailor the initial treatment, including the extent of surgery, as well as the need for adjuvant postoperative therapy and the intensity of subsequent follow-up care. The low-risk category consists of patients who are young and female, with intraglandular tumors that are smaller than 4 cm, and who show no evidence of distant metastases.[10]

CONCLUSION

Authors found that WDT-UMP are intermediate lesions seen in thyroid specimens.

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