

Retrospectively analysis of Pathological features of 1047 cases of Thyroid Nodules



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ABSTRACT

Background: In recent years, the incidence of thyroid cancer is on the rise, almost become one of the fastest-growing malignant tumor, especially in women. The reasons of the incidence of thyroid, is not only the use of detection means. The relationship between clinical pathological characteristics and prognosis of thyroid is controversial.

Aims and Objective: One thousand forty seven cases of thyroid nodule (thyroid nodules, TN) were retrospectively analyzed, to study the distribution of TN and its clinical pathological features. **Materials and Methods:** Clinicopathological data of 1047 cases TN were retrospectively studied, from Chengde Medical College Affiliated Hospital and (10.2017 to 08.2018) Chengde County Hospital (01. 2016 to 08.2018), χ^2 test is used to analyze the relationship between clinical pathologic factors and lymph node. **Results:** In 1047 cases of TN, nodular goiter 50.62%, Hashimo-to's thyroiditis 3.34%, thyroid carcinomas 32.28%, thyroid adenoma 10.12%, toxic nodular goiter 0.29%. The lymph node metastasis positive rate was higher in <45 years of age and tumor diameter > 1 cm of the thyroid carcinoma patients. Gender, whether single had no relation with occurrence of neck lymph node metastasis.

Conclusion: The lymph node metastasis positive rate is higher in <45 years of age and tumor diameter greater than 1 cm of the thyroid carcinoma patients.

Key words: Thyroid nodules; Pathological features

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INTRODUCTION

Located near the base of the neck, the thyroid is a large endocrine gland that produce hormones that help control growth and metabolism. The thyroid, heavier in women than men, and consists of follicular histologically, which is the the basic structural and function unit of the thyroid. The most common thyroid tumors is primary of follicular, and others primary of parafollicular cells. Thyroid tumors can be divided into epithelial tumors, non epithelial tumors, malignant lymphoma and other tumors and tumor-like lesions according to the histology and malignance. According to the presence of thyroid function, Thyroid goiter is divided into two categories: non toxic and toxic. Thyroiditis is divided into five kinds: acute, radioactive, subacute granulomatous, invasive fibrous and lymphocytic. This study mainly analyzes common thyroid epithelial tumors and its occurrence along with their pathologic

features, including thyroid nodular goiter, hashimoto disease, thyroid gland tumor nodules, diffuse toxic goiter, thyroid papillary carcinoma, thyroid follicular carcinoma and medullary thyroid carcinoma.

MATERIALS AND METHODS

Clinical data

Pathological data of 664 patients with thyroid nodules was collected from Chengde Medical College affiliated hospital from a period of October 2017 to August 2018 and Chengde county hospital from January 2016 to August 2018. Of which 125 cases of male patients (18.83%), age 29-77, mean age 54.31 ± 10.22 , 539 cases of woman patients (81.17%), age 14-79, mean age 49.47 ± 11.67 . A total of 1047 cases of thyroid nodule were detected in the 664 cases, including some multiple thyroid nodules in one patient.

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All cases of specimens are fixed in the neutral formalin liquid for 12 hours. The samples were taken for routine histopathological observation. Haematoxylin Eosin sliced were read and evaluated by two senior pathologists double blinded. Immunohistochemistry was used to be diagnosed definitively. Statistical Package for Social Science 18.0 software was used to analyze the percentage of diseases, and the relation between the lymph node positive rate and the pathological characteristics (gender, age, histological type, single or multiple nodules, the diameter of the cancer) $P < 0.05$ was statistically significant.

Diagnostic criteria

According to the WHO 2010, diagnostic criteria for thyroid follicular carcinoma standard is: thick fibrous capsule, follicular, solid, or a beam, or a variety of hybrid structure, capsular or vascular invasion is the main basis of diagnosis of follicular carcinoma. In vascular invasion the invaded blood vessels should be vein in capsule or close to the capsule. Tumor cells close to the vessel wall, and dash forward to lumen, with endothelial lining. IHC showed positive for TG, AE1, EMA, laminin, and collagenIV.

Statistical analysis

Statistical Package for Social Science 18.0 statistic software was used in this study, χ^2 text was used to analyze the distribution of diseases, $P < 0.05$ was statistically significant.

RESULTS

Of the 664 case of patients with thyroid tumor, 172 cases were ≤ 45 years, accounting for 25.90% of all patients (172/664). Four hundred ninety two cases were ≥ 45 years, which accounted for 74.10% of all patients (492/664). Their age ranged from 14-79 years, with mean age being 50.34 ± 11.59 years.

In 1047 thyroid nodules of 664 patients, there are 530 cases of nodular goiter (Figure 1), accounting for 50.62% (530/1047), 35 cases of Hashimoto's thyroiditis (Figure 2), accounting for 3.34% (35/1047), 338 cases of thyroid cancer (Figure 3), accounting for 32.28% (338/1047), 106 cases of thyroid adenoma (Figure 4), accounting for 10.12% (106/1047). Three cases of Graves' disease (Figure 5), accounted for 0.29% (3/1047). There are 262 cases of patients with thyroid cancer among 664 cases. Sixty five cases were below 45 years, 177 cases were ≥ 45 years. The patient's age ranged from 22 to 79 years with a mean age of 47.72 ± 10.04 years.

The Pathological Characteristics Of Thyroid Cancer

In 664 cases, multiple thyroid nodules were found among the total of 1047 thyroid nodules of which

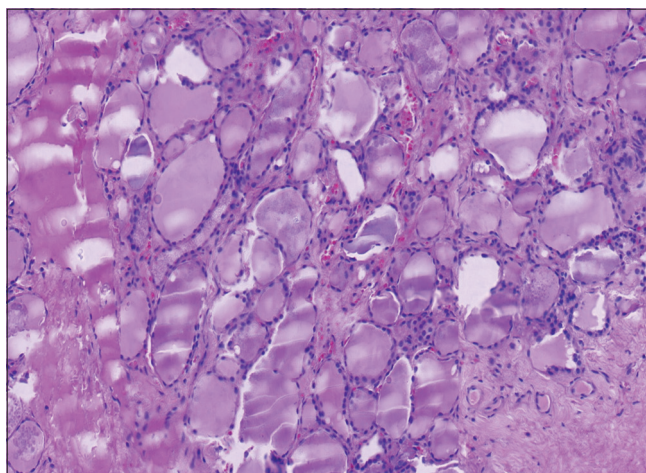


Figure 1: Nodular goiter

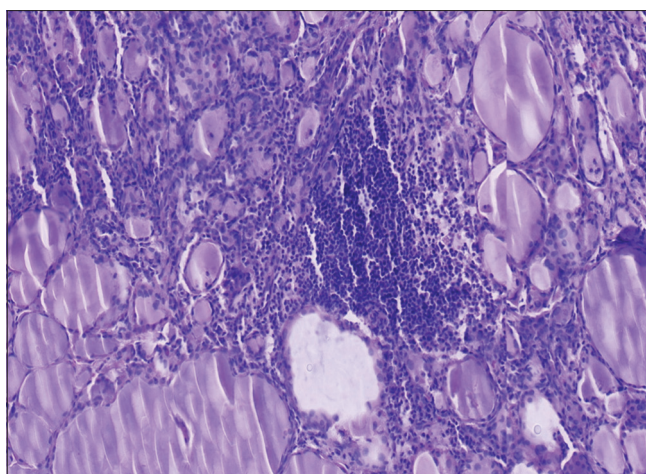


Figure 2: Hashimoto's thyroiditis

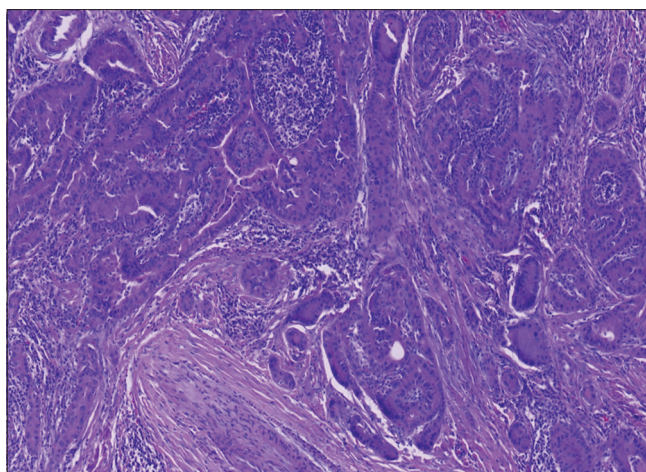


Figure 3: Papillary thyroid carcinoma

338 thyroid cancer nodules were diagnosed. Neck lymphadenectomy was done in 270 out of 338 thyroid cancer nodules.

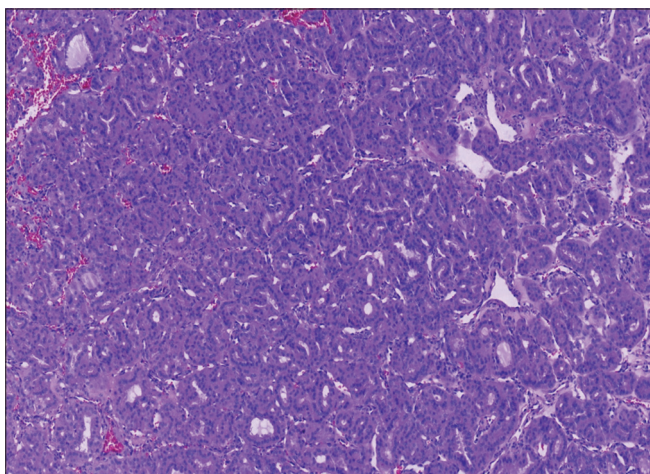


Figure 4: Thyroid adenoma

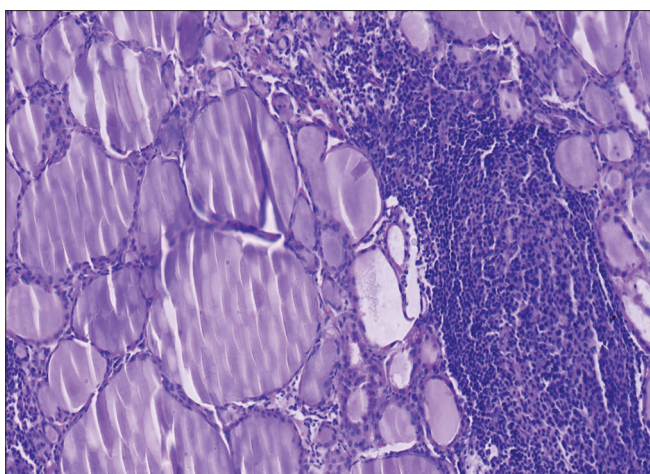


Figure 5: Toxic nodular goiter

The relationship between age and lymph node metastasis

In 270 thyroid nodules, there were 88 nodules found in ≤ 45 years patients and 182 nodules ≥ 45 years. In 88 nodules, there were 50 cases of lymph node metastasis negative patients and 38 were positive cases with rate of 43.19% (38/88). In 182 cases of thyroid cancer nodules, 132 cases were negative of lymph node metastasis where as 50 cases were positive, with rate of 27.47% (50/182). The differences between the two groups were statistically significant ($\chi^2=6.663$, $P=0.01$).

The relationship between gender and lymph node metastasis

In 270 thyroid nodules, there were 40 male patients and 230 female patients. In 40 male patients, 23 cases of lymph node metastasis negative and 17 were positive with rate of 42.50% (17/40). In 230 female patients, 159 cases of lymph node metastasis negative and 71 positive with rate of 30.87% (71/230). The difference between the two groups were not significant ($\chi^2=2.098$, $P=0.147$).

The relationship between the diameter of tumor and lymph node metastasis

In 270 thyroid nodules, there were 138 cases of thyroid microcarcinoma, 26 cases of multiple thyroid microcarcinoma, and 106 cases thyroid carcinoma (≥ 1 cm). In 138 cases of thyroid microcarcinoma, 108 lymph node metastasis negative, and 30 cases positive, positive rate was 21.74% (30/138). In 26 cases of multiple thyroid microcarcinoma, 16 lymph node metastasis negative, and 10 cases positive, positive rate was 38.46% (10/26). In 106 cases of thyroid carcinoma (≥ 1 cm), 58 lymph node metastasis negative and 48 cases were positive, with positive rate of 45.28% (48/106). Difference between the three groups were statistically significant ($\chi^2=15.577$, $P=0.000$).

The relationship between the multiple and lymph node metastasis

In 664 cases of patients, there are 262 cases of patients with thyroid cancer, 200 cases of solitary and 62 cases of multiple thyroid cancer. In 200 cases of solitary patients, lymphadenectomy was done in 174 patients, 118 lymph node metastasis negative, and 56 cases positive, positive rate was 32.18% (56/174). In 62 cases multiple patients, lymphadenectomy was done in 53 patients, 36 lymph node metastasis negative and 17 cases were positive with positive rate of 32.08% (17/53). The differences between the two groups were insignificant ($\chi^2=0.000$, $P=0.98$).

The relationship between the histological type and lymph node metastasis.

In 664 cases of patients, multiple thyroid nodules were found. Among them 338 thyroid cancer nodules were diagnosed. In 338 thyroid cancer nodules, including 307 nodules of papillary carcinoma nodules, 5 nodules of follicular thyroid carcinomas, 35 nodules of medullary carcinoma of thyroid and 1 nodule of squamous cell carcinoma.

Lymphadenectomy was done in 262 nodules out of 307 nodules of papillary carcinoma nodules, 176 lymph node metastasis negative, and 86 positive, positive rate was 32.82%(86/262). Lymphadenectomy was done in 3 nodules out of 5 nodules of follicular thyroid carcinomas, 2 lymph node metastasis negative and 1 positive, positive rate was 33.33% (1/3). Lymphadenectomy was done in 2 nodules out of 35 nodules of medullary carcinoma of thyroid, 1 lymph node metastasis negative, and 1 positive, positive rate was 50% (1/2). One lymph node metastasis negative in squamous cell carcinoma.

DISCUSSION

Thyroid disease is one of common endocrine disease. With the development of ultrasound technology, the case detection rate soar. Fine-needle aspiration biopsy with B-ultrasonic

guided play an important role in the diagnosis of thyroid neoplasm. Thyroid disease is influenced by many factors, including hormone, radiation, environment and heredity. Patients complained of oppressive feeling with strong neoplasm. Smaller nodules is often discovered by physical examination. In recent years, the incidence of thyroid cancer is on the rise, almost become one of the fastest-growing malignant tumor, especially in women. The reasons of the incidence of thyroid, is not only the use of detection means. The relationship between clinical pathological characteristics and prognosis of thyroid is controversial.¹⁻³ One thousand forty seven cases of thyroid nodule diseases distribution and clinical pathological features were retrospectively analyzed, to discuss the pathogenesis and characteristics of thyroid carcinoma. So as to provide a basis for the prevention and cure in the early diagnosis of thyroid carcinoma.

The current study about the distribution of thyroid nodule disease in China is very rare. According to a study in Hubei Province, the incidence of nodular goiter and thyroid canceris increased in 2013 than 2011. Other thyroid diseases, such as hashimoto's thyroiditis, thyroid adenoma, diffuse toxic goiter, is on the decline. Because of the shorte time of the research, only one year, the evidence of thyroid nodule diseases was not sufficient in this study. According to the analysis of 1047 cases of thyroid nodule, nodular goiter is one of the most common thyroid nodules, accounts for about 50.62%, followed by thyroid cancer, accounting for 32.28%. As a result of B ultrasonic examination in thyroid nodule, the pathologic materials combined with ultrasound imaging, greatly increase the detection rate of thyroid carcinoma.

The study about the clinical pathological features of thyroid showed that,^{4,5} the independent risk factors about

metastasis of central region lymph node in patients with thyroid microcarcinoma, included male (<45 years) tumor diameter >6 mm, outside the capsule/gland outside invasion and multiple carcinoma. This research shows that, lymph node metastasis positive rate is higher in <45 patients is in concurrence with the above findings. With respect to the diameter of the thyroid carcinoma, 1 cm is recognized to be the bounded, <1 cm as microcarcinoma. The results also suggest the opportunity of lymph node metastasis also increase along with the tumor diameter.

Above all, thyroid nodule diseases and the clinical characteristic of thyroid carcinoma were discussed, to provide a basis for prevention and cure in the early diagnosis of thyroid carcinoma.

REFERENCES

1. Adam C, Niemann BS, Alexander T, Reid BA, Joshua Smith BA, James Hammond, et al. Association of patient age with high-risk pathologic features in papillary thyroid cancer. *Journal of Surgical Research* 2017;211:228-232.
2. Lan-lan X, Song C and Ya-ming LI. Analysis of Recurrence Factor of Postoperative Papillary Thyroid Cancer. *J Tongweisu* 2014; 27(1):22-27.
3. Noor J and Volkert BW. Aggressive differentiated thyroid cancer. *European Journal of surgical oncology: the journal of the European Society of Surgical Oncology and the British Association of Surgical Oncology* 2018;44(3):367-377.
4. Shulin JH, Aizhen J, Kuo SM, Tan WB, Ngiam KY and R Parameswaran R. Rising incidence of thyroid cancer in Singapore not solely due to micropapillary subtype. *Annals of the Royal College of Surgeons of England* 2018; 100(4): 295-300.
5. Krzysztof K, Agnieszka ZK and Beata W. Multi- and Unifocal Thyroid Microcarcinoma: Are There Any Differences? *Advances in clinical and experimental medicine: official organ Wroclaw Medical University* 2016;25(3):485-492.

Authors Contribution:

ZG-Contributed to the original idea, designed the study; ZX- Contributed to patient enrolment, data analysis.

Work attributed to:

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