

**A CLINICOPATHOLOGICAL STUDY OF THYROID NODULES****DILDAR HAJI MUSA, MBChB, CABS, FRCS\*****MAHMOUD ALI ABDI, MBChB, FKBMS\*\*****MOWAFAK MASOUD BAHADDIN, MBChB, FIBMS, FACS\*\*\****Submitted 4/12/2018; accepted 16/02/2019***ABSTRACT**

**Background:** Nodular thyroid disease is very common and surgeons need to differentiate benign from malignant nodules. Fine needle aspiration cytology of malignancy (FNAC) can assist the surgeon to select the proper technique for thyroid nodule management. The clinical parameters of patients with thyroid nodules were explored and the rate of malignancy was assessed. As well, the role of fine needle aspiration cytology in the diagnosis of these nodules compared to histopathological findings was evaluated.

**Patients and Methods:** In the current prospective cross-sectional study, 79 patients diagnosed with thyroid swelling were undergone medical and clinical examinations, biochemical tests, and fine needle aspiration cytology at Azadi Teaching Hospital in Iraq in 2016. Tissue specimens of thyroid were sent for histopathological diagnosis.

**Results:** Thyroid nodules were more common in female (84.8%), the mean age was 40.28 years. The most common indication of surgical intervention was dysphagia. Multi-nodular was the commonest type of thyroid nodules (73.4%) followed by a follicular adenoma (8.9%) and Hashimoto's thyroiditis (7.6%). Prevalence of malignancy was 7.6% and papillary thyroid cancer was the most common cancer (6.3%). Sensitivity, specificity, positive predictive value, negative predictive value and accuracy rate of fine needle aspiration cytology through histopathological diagnosis were 66.7%, 100%, 100%, 97.3%, and 97.5%, respectively.

**Conclusions:** The most common types of thyroid nodules were a multi-nodular goiter, follicular adenoma, and thyroiditis. Fine needle aspiration cytology is easily applicable and reliable method for thyroid nodules evaluation with an acceptable sensitivity.

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**T**hyroid swelling (known as goiter) is a common clinical presentation of iodine deficiency. Its prevalence is increasing across the world and it is more common among females and advanced ages<sup>1,2</sup>. Thyroid cancer is responsible for about 1% of all cancers and about 0.5% of cancer-related mortality<sup>3</sup>. Although majority of thyroid nodules are benign, a hidden percentage is malignant. Therefore,

early diagnosis of the nodules whether benign or malignant create the management opportunities for surgeons and will remain as an important way to raise life expectancy and decrease the malignant thyroid nodules, and slow progressing of their characteristics<sup>3</sup>. Particularly those solitary nodules are challengeable for management by surgeons and pathologists.

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Thyroid gland in a normal situation is impalpable. Factors leading to goiter are biosynthetic defects, autoimmune disease, iodine deficiency, and nodular disease acting through different clinical mechanisms. Through physical and clinical examinations, various forms of common thyroid cancer are amenable to diagnosis. Clinicians depend on the etiology, thyroid swelling and physical examinations for thyroid nodules evaluation. More than 20% of thyroid nodules are detectable through ultrasonography and pathological evaluations. The reliance of majority of authorities for detection of thyroid nodules is on physical examination and leave ultrasound for nodule size determination and thyroid biopsy assistance. It is not possible to distinguish benign from malignant follicular lesions using cytological evaluations only as they have potential to be malignant nodules when there is invasion to cellular membrane, this invasion can be detected only by histological examination but not cytological evaluation<sup>3</sup>.

Although some thyroid nodules are large enough (usually larger than 1 cm in diameter) that are easily visible and palpable however, it depends on thyroid location, neck structures, and examiner's experience<sup>4, 5</sup>. The role of fine needle aspiration cytology (FNAC) is increasing to be the initial evaluation tool for thyroid lesions' detection. It is inexpensive and easily implementable in an outpatient setup by clinicians. Another reason is that other medical laboratory tools have a limited role in understanding the thyroid nodules' nature. In addition, isotope is only useful for capacity functioning

without detection of histopathological features<sup>6</sup>.

The prevalence of thyroid nodules is approximately 4% to 7% in the general population, however, thyroid nodules are in fact present in up to 60% of patients undergoing autopsy<sup>7-9</sup> and 30%–50% by ultrasound<sup>10,11</sup>. Between 5% and 6.5% have been shown to be malignant<sup>12</sup>. There is no any credible investigation to uncover the role of FNAC in thyroid nodules evaluation in this region. Moreover, a little attention has been paid to critical evaluation of the role of FNAC in thyroid nodules diagnosis in the literature.

The clinical parameters of thyroid patients were explored and the role of FNAC in the diagnosis of thyroid nodules compared to histopathological findings was evaluated in the present study. In addition, the rate of malignancy was examined in the study sample.

### **MATERIALS AND METHODS**

In the current prospective cross-sectional study, patients attended the surgical clinic and surgical ward of Azadi Teaching Hospital in Duhok-Iraq for their suspected thyroid nodules (swellings) was consecutively screened for eligibility criteria of the investigation between 1<sup>st</sup>, December 2015 and 1<sup>st</sup>, December 2016. Patients were evaluated independently by two authors of the study for the thyroid nodules through the history taking and physical examination.

Patients met eligibility criteria in both genders 18 years and older, and with suspected thyroid nodules regardless of the symptom duration and nodule size. Patients who had not desired conditions for surgical interventions, with diffuse goiter

following histopathological confirm, pregnant women or did not get the consensus between two clinical evaluators were excluded from the study. Out of 95 patients were screened, 7 did not accept to use their information for the study, and 9 patients did not have the desired health condition for surgical procedures. The remainders 79 were recruited in the study following taking the ethical clearance from the Scientific Research Division of Duhok General Directorate of Health in Duhok and the written consent form from the patients.

These patients met eligibility criteria were referred to an experienced pathologist for biomedical tests, neck ultrasonography, FNAC, and histopathological techniques in the Central Laboratory Department of Histopathology and Cytology in Duhok.

#### **History and Physical Examination**

Upon presentation, initially, the patients were evaluated by history for dyspnea (67.1%), dysphagia (41.8%), voice changes (7.6%), symptoms of hyper or hypothyroidism, family history of thyroid nodules or cancer (50.6%), history of neck irradiation during childhood or continuous radiation exposure (all patients). On physical examination, patients examined for the site (53.2% in both lobes, 31.6 in right and 15.2% in left lobe), number of the nodules, signs of compression or deviation of the trachea, the lymph node status. Thyroid glands were palpated carefully and independently by two surgeons before FNAC application and the required information was explained to the patients. The duration symptoms of the majority of them (50.6%) were between 1 and 5 years followed by 20.3% between 5 and 10 years, 16.5% between 1 month and

less than one year, and 12.7% with more than 10 years.

#### **Biomedical Tests**

Five cc venous blood samples were taken from all patients during their visit for measuring serum thyroid stimulating hormone (TSH) by taking into account the antiseptic and hygienic conditions. The TSH was categories as normal, low, or high level.

#### **Neck Ultrasonography**

The neck ultrasonography for each patient was performed in a supine position and transducer was applied gel over transducer with a high-frequency rectilinear transducer between 5 and 10 MHz in the radiology department of the hospital. The neck was examined over right, left lobe and the isthmus of the thyroid gland in transverse and longitudinal views and entire cervical lymph node levels. The ultrasound was used in order to assist the surgeon in solitary and multinodular lesions distinction only. The echostructure in ultrasound was recorded as solid, cystic, complex, or non-specified.

#### **Fine Needle Aspiration Cytology**

The nodule was fixed by the fingers of the non-aspirating hand, and a needle (21 to 24 gauge), attached to a syringe (5–10 cc), was inserted perpendicularly to the anterior surface of the neck. Once the nodule was penetrated, a deliberate, vertical motion of the needle, back and forth over 1–2 mm, and then one or two 360-degree rotations, will jar loose cellular material. This material was then aspirated by applying negative pressure with the syringe. Following withdrawing the needle, the needle was detached and then reattached with air in the syringe. The air was expelled, forced cellular contents

within the needle onto a slide which was immediately smeared and fixed in 95% ethanol. Pressure applied by gauze over the puncture site while the slides were prepared<sup>13</sup>. The patient was observed for a few minutes to make sure there is no swelling, bleeding, or significant discomfort. The results were categorized as benign, malignant, or suspicious. Then, a surgical operation was performed and thyroid tissue specimens were sent for histopathological examination. The aspiration, cytology examinations, and histopathological evaluations were performed by one experienced pathologist at the Central Laboratory Department of Histopathology and Cytology.

Patients were then managed surgically and medically following final confirmation by histopathological findings. Total thyroidectomy, hemithyroidectomy, subtotal thyroidectomy, and near total thyroidectomy were performed for 44.3%, 29.1%, 13.9%, and 12.7%, respectively under general anesthesia by the same surgical team. None of the patients had been exposed to radiation therapy to the neck area.

### Measurement Criteria

In this study, the solitary thyroid nodule (discrete thyroid swelling) was defined as a discrete or isolated swelling in the thyroid gland which is distinct from thyroid parenchyma. In the FNAC evaluations, Bethesda system for reporting thyroid fine needle aspiration specimens used. Nodular goiter, sub-acute thyroiditis, cyst, colloid nodule, and Hashimoto's thyroiditis were considered as benign nodules; follicular neoplasm, follicular atypia (FLUS), hurthle cell neoplasm, and suspicious for malignancy as suspicious

lesions; and follicular carcinoma, medullary carcinoma, anaplastic carcinoma, and papillary carcinoma as malignant lesions<sup>4</sup>.

Sensitivity, specificity and predictive values of the FNAC and ultrasonography were evaluated on the basis of histopathological diagnoses. The FNAC results were classified as positive (malignant nodule) and negative (benign nodule). For reporting thyroid cytopathology, the Bethesda System was used in the present study<sup>4</sup>. According to the Bethesda System 2009 classification, benign findings were considered as negative test results and atypia of undetermined significance (AUS) or follicular lesion of undetermined significance (FLUS), follicular neoplasm/suspicious for follicular neoplasm (SFN), malignancy suspicious, and malignant were considered as the positive results. Those thyroid nodules were diagnosed by FNAC tool as malignant and confirmed through histopathological evaluations were considered as true positive and those diagnosed as benign and confirmed through histopathological results were considered as true negative.

### STATISTICAL METHODS

The obtained information was entered into SPSS version 24:00 statistical software and the descriptive purposes of the study were examined through the frequency distribution. The Univariate analysis of variance was performed to examine the predictors of malignancy through histopathological evaluations. The *p*-value less than 0.05 was considered as the statistically significant difference.

## RESULTS

A total of 79 patients with suspected thyroid nodules were evaluated in the present study. The mean age of the patients was  $40.28 \pm 11.72$  years.

The sex distribution showed that patients were predominately females; 67 (84.8%) compared to 12 males with 15.2% (18-70 years old). The male: female ratio was 0.18:1.00. More than half of the assessed patients (50.6%) had a family history of thyroid nodules.

The initial assessments of clinical examination with assistance of ultrasound showed that the most of the patients had thyroid nodules in both lobes (53.2%), followed by 31.6% in right and 15.2% in the left lobe. In addition, the majority of patients had a multinodular goiter (65.8%) compared to 34.2% with solitary nodules.

Regarding clinical features, the common complaint was dysphagia in 41.8% (n=33), including 33 benign nodules and 1 suspicious nodule for malignancy; followed by two patients (2.7%) with exophthalmos (only benign nodule); and some constitutional symptoms (palpation, nervousness, insomnia etc.) found in 58.2% (n=46) of patients with no substantial differences in FNAC findings; as shown in **Table 1**.

The findings of the FNAC technique showed that the benign nodules were the most prevalent types, followed by malignancy among 5.1% (with taking into account suspicious nodules as malignant lesions), however, this rate was increased to 7.6% through the histopathological diagnoses; 1.3% for follicular carcinoma and 6.3% papillary carcinoma (Table 2).

**Table 1: Clinical Presentations of Patients Attended the Clinic for Thyroid Nodules**

Clinical features (n=79)	FNAC Findings*				for	p-value (two-sided)
	Total	Benign	Malignant	Suspicious malignancy		
Dysphagia	33 (41.8)	32 (42.7)	0 (0.0)	1 (100)		0.152**
Exophthalmos	2 (2.5)	2 (2.7)	0 (0.0)	0 (0.0)		1.00**

\*The findings were presented as frequency (percentage); \*\*Fishers' exact test was performed for statistical differences.

**Table 2: Findings of Thyroid Nodules by FNAC, Ultrasonography, and Histopathology**

Thyroid nodules findings	Frequency	Percentage	
FNAC Results	Benign	75	<u>94.9</u>
	Malignant	3	3.8
	Suspicious	1	1.3
Histopathology Results	multinodular goiter	58	<u>73.4</u>
	Hashimoto's thyroiditis	7	8.9
	Follicular adenoma	7	8.9
	Follicular carcinoma	1	1.3
	Papillary Carcinoma	5	6.3
	Hurthle adenoma	1	1.3

The underline numbers show the highest percentages.

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Comparisons of FNAC technique versus histopathological evaluations are summarized in **Table 3**. The histopathological evaluations showed that

the suspicious nodule and 2 of the benign cases showed by FNAC were confirmed as malignant.

**Table 3: Correlations between Ultrasonography Feature and Histopathological Findings in Patients with Thyroid Nodules**

FNAC Results	Histopathology Results						Total
	multinodular Goiter	Hashimoto's Thyroiditis	Follicular Adenoma	Follicular Carcinoma	Papillary Carcinoma	Hurthle Adenoma	
Benign	58	7	7	0	2	1	75
Malignant	0	0	0	0	3	0	3
Suspicious	0	0	0	1	0	0	1
<b>Total</b>	<b>58</b>	<b>7</b>	<b>7</b>	<b>1</b>	<b>5</b>	<b>1</b>	<b>79</b>

The study showed that FNAC tool has 66.66% ability to diagnose the malignant nodules in the thyroid gland, in another way 2 of 79 thyroid nodules recognized as benign were diagnosed as malignant nodules by histopathological evaluations. However, FNAC was able to diagnose the

hundred percent of benign nodules, as confirmed with no false positive (Table4). The FNAC tool has hundred percentages to predict the malignant lesions and 97.33% to predict the non-malignant nodules. The overall accuracy of the FNAC tool was 97.5%.

**Table 4: Sensitivity, Specificity, Predictive Values for the Presence of Malignancy in Thyroid Nodules According to FNAC Findings**

Prediction Indices	Frequency				Percentages				
	TP	FP	TN	FN	Sensitivity	Specificity	PPV	NPV	Accuracy
<b>FNAC findings</b>	<b>4</b>	<b>0</b>	<b>73</b>	<b>2</b>	<b>66.66</b>	<b>100</b>	<b>100</b>	<b>97.33</b>	<b>97.50</b>

Abbreviations: TP: True Positive; FT: False Positive; TN: True Negative; FN: False Negative; PPV: Positive Predictive Value; NPV: Negative Predictive Value.

The Univariate analysis of variance did not show any predictive aspects for

malignancy diagnosis through histopathological evaluations (Table 5).

**Table 5: Univariate Analysis of Variance of Predictive Aspects for Malignancy Diagnosis by Histopathological Evaluations**

Patients' Characteristic	Dependent Variable: Histopathological Categories	
	F	P-value (two-sided)
Gender	.107	.746
Family	.464	.501
Site of nodules	.457	.637
duration	.098	.960
dysphagia	.213	.648
palpitation	.002	.967
exophthalmos	.010	.922
TSH	.489	.618
Age	.439	.991

## DISCUSSION

The present study showed that dysphagia is the most prevalent clinical presentation among the patients with thyroid nodules. The overall malignancy prevalence was 7.6% through histopathological evaluations in the study sample. The overall sensitivity of the FNAC tool was not high but is an acceptable (66.66%) through the histopathological evaluations and the specificity, prediction values, and accuracy were high.

Thyroid nodules are the common lesions presented to the clinicians in outpatient setups. Therefore, it is required to formulate a standard investigation protocol for junior and senior clinicians to increase proper management chances and preclude the repetitive surgeries. Otherwise, it will remain a global issue with enormous magnitude. The radiological and pathological interventions such as FNAC has been shown to be very beneficial tools for the clinicians. It seems that sensitivity of the FNAC is increased with passing two or three times on the nodule.

There are no consistent results on sensitivity, specificity, and predictive values on Fine-needle aspiration cytology in the diagnosis of thyroid nodules. We found that sensitivity; specificity, positive predictive value, and a negative predicate value, and accuracy are 66.66%, 100%, 100%, 97.33%, and 97.50 respectively. These ratios for FNAC in the literature are between 65% and 98% for sensitivity and between 73% and 100% for specificity<sup>14-16, 6, 5</sup>. For instance, Muratli *et al*,<sup>17</sup> found the corresponded results as 87.1% for sensitivity, 64.6% for specificity, 76.1% for positive predictive value, 79.5% for negative predictive value, and 77.3%

for its accuracy. The discrepancies may back to the clinical characteristics of thyroid nodules or experience of examiners in different regions.

Malignant lesions can be diagnosed fairly and accurately. In this study, 5.1% of malignant lesions were diagnosed by FNAC compared to 7.6% by histopathological evaluations. The sensitivity of FNAC tool is not high, therefore, the caution must be paid to the interpretation of negative results to reduce the false negative rate as it has a key role in thyroid nodules management. In the present study, 2 of 73 negative nodules were confirmed to be malignant (papillary carcinoma) through histopathological diagnosis reduced the sensitivity to 66.66%. Several factors could be behind this finding. Even the small size nodules do not guarantee a low risk of malignancy<sup>18</sup>.

Some studies have reported that diagnostic accuracy of FNAC for thyroid nodules can be improved with ultrasonography guidance resulting in lower false negative rates, in particular for impalpable lesions<sup>19-20, 18</sup>. Nam-Goong *et al*,<sup>18</sup> reviewed retrospectively the medical records of the patients underwent ultrasound-guided FNAC and examined its role in thyroid malignant nodules. Subsequently, the sensitivity was reached to 90.9 for solid nodule and 68.2 for a hypo-echoic nodule. The sensitivity difference has been reflected in the malignancy rate as 13.9% through cytological and 12.0% by histopathological diagnoses compared to 5.1% and 7.6%, respectively in the present study. However, still, ultrasound-guided fine-needle aspiration (USGFNA) is limited to incidentally detect impalpable

thyroid nodules on radiology investigations, difficult-palpable nodules, and previous undiagnosed nodules on cytological evaluations<sup>18</sup>.

There is no a single diagnostic method for definitive results of thyroid cancers, including ultrasound, radiography, scintigraphy, and suppression therapy to make a differentiation between benign and malignant lesions.

Thyroid ultrasonography has been shown to be a useful tool to detect small nodules that surgeons unable to recognize on clinical examinations. It has been documented that the rate of thyroid nodules is between 30% and 50% by thyroid ultrasonography which 5-6.5% of them have malignancy<sup>11, 8, 12</sup>. Here, it is so important to investigate the impact of different nodule sizes in clinical studies. In this study, we did not determine the thyroid nodule sizes, hence we cannot make any justification on this perspective. But, the current study did not show that gender, family history of thyroid; nodule site, symptom duration, dysphagia, palpitation, exophthalmos, and age are predictors for the thyroid malignancy. The literature has reported inconsistent results on the thyroid malignancy<sup>21, 22, 18</sup>. It seems that making a between-study comparison face difficulties as the surgeons' experiences, medical interventions, patients' characteristics, and reporting systems used in these studies have some differences. In this study, ultrasound was used to distinct the solitary and multinodular lesions from each other only. Therefore, we unable to evaluate its role in malignancy diagnosis of thyroid nodules.

It is recommended to use FNAC as an initial evaluation tool for thyroid nodules

detection as it has been shown to associate with a decrease between 20% and 50% in surgical treatments<sup>23</sup>.

Dysphagia was the most common complaint of the patients in this study. Despite that these two symptoms raise the concern for cancer, especially when they are persistent<sup>21, 24</sup>. The vast majority of patients were diagnosed with colloid multinodular, this is mostly explained by the presence of bilateral multinodular in majority of the patients (59.49%) which was confirmed by histopathology, compressing both trachea and esophagus consequently causing dyspnea and dysphagia.

### **Limitations of the Study**

The findings reported in the current study must be analyzed in illumination of medical interventions and surgeons' experiences. All histopathological FNAC evaluations were performed by the same experienced pathologist only in one pathology lab reflecting a reduction in possible bias due to examination variability. Although, the mentioned hospital in the methods section is the only public setup for these kinds of patients, the private clinics must not be ignored. This infers that the sample study may not be the representative of the general population in this region or across the country. At the end, it must be mentioned that prevalence rates reported in this study are not age specific or gender specific and have not been standardized to the country population. Therefore, it is hard to make a comparison between different regions or countries across the world.

The current study showed that the FNAC tool has an acceptable sensitivity for the diagnosis of malignant nodules and a very



high specificity for benign nodules diagnosis in the thyroid gland. It should be used as an initial tool to assess thyroid gland nodules by surgeons. However, based on the previous studies, it is recommended to use ultrasound as a guide to increase the sensitivity of the FNAC.

### CONFLICT OF INTEREST

The authors declare that there are no any conflicts of interest.

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## پوخته

### فهكۆلینهكا كلینیکی یا گریكین سایرودی: فهكۆلینهكا سەربوری

**پیشهکی:** نهخوشیا گریكین سایرودی نهخوشیهك بهربه‌لآفه. نهشتهرگەر پیندقی دکەت کۆ جوداهیی دنأقەبرا گریكین دەستپیکى و پهنجەشیری دروست بکەن. دەرزی زراف (FNAC) دشیت هاریکاریا نهشتهرگەران بکەت دا کۆ تەکینیکا دروست بۆ دەرمان کرنا گریکین سایرودی هەلبژێرن. ل فهكۆلینا بەردەست سالوختین کلینیکی یێن نهخوشین خودان گریکین سایرودی هاتن ناسین و رولێ دەرزی زراف ل ناسینا گریکین سایرودی ل هەمبەر ئەجامین هیستوپاتولوژیکی هاتە هەلسەنگاندن. هەروەسا رێژەیا گریکین پهنجەشیری هاتە دیارکرن.

**شیوه:** ل فهكۆلینا نمونه فهبرا بەردەست، رولێ دەرزی زراف و ستور ل ۷۹ نهخوشین ب وەرمینا سایرودی هاتن ناسین هات گەنگەشەکر. نهخوش ب سالوختین کلینیکی، لابور، و دەرزی زراف هاتن ناسین. نهخوش ل نهخوشخانەیا نازادی یا فیرکرنی ل سالا ۲۰۱۶ هاتن وەرگرتن. نمونه‌یێن تەقینەکین هاتن وەرگرتن بۆ فهحسین هیستوپاتولوژیکی هاتن هەنارتن.

**هەنجام:** گریکین سایرودی پتر ل ناف ژنان (۸۴.۸٪) بهربه‌لآف بون. نافەندا تەمەنی نهخوشان ۴۰.۲۸ سال بو. زەحمەتی یێن خوارنی لناف نهخوشان نیشانەکا هەرە بهربه‌لآف بو. زورترین جورەیا گریکان پینک دەت ژ چەند گریکی (۷۳.۴٪)، follicular adenoma (۸.۹٪)، و Hashimoto's thyroiditis (۷.۶٪). رێژەیا گریکین پهنجەشیری ۷.۶٪ بو و گریکین سایرودی یێن پاپیلاری بهربه‌لآف بو (۶.۳٪). نزاکی، تاییه‌نتمەندی، پینش بینیا ئەرنی، و هەروەسا پینش بینیا یا نەرنی ل هەمبەر ناسینا هیستوپاتولوژیکی ۶۶.۷٪، ۱۰۰٪، ۱۰۰٪، و ۹۷.۳٪ بریز بون.

**دەرئەنجام:** بهربه‌لآف ترین جورەیین گریکین سایرودی پینک دەتان ژ گویترا چەند گریکی، follicular adenoma، و هەروەسا thyroiditis. دەرزی زراف جورە تەکنیکەکه بساناهی دەیتە بکارئینان و یا باوەرپیکری بۆ هەلسەنگاندنا گریکین سایرودی ب نازیکا بلندە.

**په‌یفتین سەرەکی:** گریکین سایرودی، نهخوشی ناسیا کلینیکی، دەرزی زراف، باوەری، پهنجەشیری، دەستپیکى.

## الخلاصة

### دراسة إكلينيكية للعقد الغدة الدرقية

**الخلفية والأهداف:** مرض الغدة الدرقية العقدي شائع جدًا ويحتاج الجراحون إلى التمييز بين العقيدات الخبيثة والحميدة. خزعة بالإبرة الدقيقة للخلايا الخبيثة (FNAC) يمكن أن تساعد الجراح في اختيار التقنية المناسبة لإدارة العقيدات الدرقية. تم دراسة المعلمات السريرية للمرضى الذين يعانون من عقيدات الغدة الدرقية وتقييم معدل الورم الخبيث. كذلك، تم تقييم دور خزعة بالإبرة الدقيقة للخلايا الخبيثة في تشخيص هذه العقيدات مقارنة بالنتائج التشريح المرضي.

**المواضيع و طرق البحث:** في الدراسة الاستقصائية الحالية المستعرضة ، خضع 79 مريضاً تم تشخيصهم بتورم الغدة الدرقية خضعوا لفحوصات طبية وسريرية، واختبارات كيميائية حيوية، و خزعة بالإبرة الدقيقة للخلايا في مستشفى آزادي التعليمي في العراق في عام 2016. تم إرسال عينات من الأنسجة من الغدة الدرقية للتشخيص المرضي.

**النتائج:** كانت العقيدات الدرقية أكثر شيوعاً عند الإناث (84.8%) ، وكان متوسط العمر 40.28 عاماً. وكان مؤشر الأكثر شيوعاً للتدخل الجراحي عسر البلع. كان العقيدات المتعددة أكثر أنواع العقيدات الدرقية شيوعاً (73.4%) تليها الورم الحميد الجريبي (8.9%) والتهاب الغدة الدرقية هاشيموتو (7.6%). كان معدل انتشار الأورام الخبيثة 7.6% وكان سرطان الغدة الدرقية حليمي سرطان الأكثر شيوعاً (6.3%). الحساسية والنوعية، والقيمة التنبؤية الإيجابية ، والقيمة التنبؤية السلبية ومعدل دقة خزعة بالإبرة الدقيقة للخلايا غرامة من خلال التشخيص التشريح المرضي 66.7% ، 100% ، 100% ، 97.3% ، 97.5% ، على التوالي. وكانت نسبة دقة خزعة بالإبرة الدقيقة للخلايا من خلال التشخيص التشريح المرضي 66.7% ، 100% ، 100% ، 97.3% ، 97.5% ، على التوالي.

**الاستنتاجات:** كانت أكثر أنواع العقيدات الدرقية شيوعاً هي الإصابة بتضخم الغدة الدرقية متعدد العقيدات، أورام الورم الحبيبي، والتهاب الغدة الدرقية. خزعة بالإبرة الدقيقة للخلايا قابلة للتطبيق بسهولة وموثوق بها لتقييم العقيدات الدرقية مع درجة حساسية مقبولة.