

Histopathological Pattern of Surgically Treated Thyroid Diseases

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Abstract

Background: Thyroid diseases are quite common and clinically important not only because they affect the functions of other organs but also since most cases are eminently treatable. The incidence of thyroid diseases varies from one geographical region to another. The present study was carried out to identify the histopathological pattern of surgically treated thyroid disease in our setup and their frequency in relation to age and sex of the patients and to compare our findings with similar works in Iraq and globally.

Materials and Methods: Total of 97 thyroidectomy case from Tikrit province, Iraq were included in this study. Clinical, gross, and histopathological data were reviewed and analyzed.

Results: Most of thyroid lesions were encountered at the age of 31-40 years. The most common thyroid lesion is multinodular goiter (40.21%). All thyroid diseases were more common in women than in men with a male to female ratio of 1:5.93. Neoplastic lesions were found in 12.37% of cases (7.22% follicular adenoma; 5.15% thyroid carcinoma).

Conclusion: Results of this study are comparable with several studies on thyroid diseases in other areas of Iraq and globally. Multinodular goiter need to be prevented by appropriate measures since Multinodular goiter of prolonged duration in iodine deficient areas poses a risk factor for the development of follicular carcinoma.

Key words: *Thyroid, Histopathology, pathology*

Introduction

Thyroid diseases are quite common and clinically important not only because they affect the functions of other organs but also since most cases are eminently treatable.

The incidence of thyroid diseases varies from one geographical region to another, High prevalence rates were found in various age groups and localities in Northern Iraq.¹ Moreover, goiterogenic factors such as poor quality of drinking water, high mineral

content of calcium and magnesium salts and bacterial contamination especially with *E.coli* were regarded as potential causes for goiter in non-endemic areas²

Thyroid cancer has been reported to be one of the top five commonest cancers in females, from Jordan (Ismail et al., 2013), Oman (Nooyi and Al-Lawati, 2011), Yemen (Ba Saleem et al., 2010), Turkey (Eser et al., 2010) and Qatar (Bener et al., 2008).³⁻⁷

According to the Iraqi cancer registry (2016), Thyroid cancer is the second most common malignancy in Iraqi women.⁸

Thyroid nodules are common clinically (prevalence, about 5%) and even more common on ultrasound examination (about 25%). In autopsy series, up to 50% of clinically normal thyroid glands contain nodules.⁹

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Solitary nodules are always viewed with suspicion of malignancy and batteries of investigations are carried out to arrive at the correct diagnosis. Same amount of concern is not taken into account in evaluating a multinodular goiter (MNG). Keeping in view the rising trend of thyroid malignancies, worldwide various authors have stressed for exclusion of malignancy in all forms of thyroid swelling, be it solitary thyroid nodule, diffuse or MNG. Incidence of carcinoma in patients with MNG varies from 7-17%. The risk of thyroid malignancy in the nodules of MNG is comparable to that which exists in solitary thyroid nodules, the possibility of thyroid malignancy should be considered in all patients with MNG. ¹⁰

Therefore, Thyroid diseases whether present as diffuse enlargement of the thyroid or appearance of one or more nodules need to be further categorized into inflammatory, hyperplastic, goitrous or benign and malignant neoplastic conditions. The patient’s best chance of cure lies with the sentient surgeon being aware of early diagnosis and proper management.

The methods currently used for assessing thyroid enlargement include FNA, TFT, thyroid scan, ultrasound and histopathology. FNAB used in solitary nodular goiter as diagnostic tool is not feasible in MNG. Only limited data is available regarding the local pattern of thyroid disease, so the present study was carried out to identify the histopathological pattern of surgically treated thyroid disease in our setup and their frequency in relation to age and sex of the patients and to compare our findings with similar works in Iraq and globally.

Material and Methods

A retrospective study of all thyroidectomy specimens received at a main surgical pathology laboratory in Tikrit province, Iraq for the period from 2009-2014. Our laboratory is one of two histopathology laboratories serving Tikrit province. A total of 97 thyroidectomy case were included in this study. Clinical, gross, and histopathological data were reviewed and analyzed using MS Excel® 2007 software.

Results

Figure (1) shows the age and sex distribution of thyroid diseases. A female predominance was noticed in all age groups. Most of thyroid lesions were encountered at the age of 31-40 years. It is apparent from figure (1) that thyroid diseases were relatively lower in patients below the age of 20 years, then rise between the age of 21 to 50 years followed by a reduction in cases at the age above 60 years.

Table (1) shows sex distribution and male to female ratio of thyroid diseases. The most common thyroid lesion is multinodular goiter (40.21%) followed by colloid goiter (27.83%) of cases. The least common lesion is Hashimoto’s thyroiditis (3.10%). All thyroid diseases were more common in women than in men with a male to female ratio of 1:5.93. Neoplastic lesions were found in 12.37% of cases (7.22% follicular adenoma; 5.15% thyroid carcinoma). Among the five reported cases of carcinoma, four cases were of papillary carcinoma type and one case was insular carcinoma Table (1).

Table 1: Sex distribution of thyroid lesions

Diagnosis	Male	Female	Total	Percentage	M:F ratio
Colloid goiter	4	23	27	27.83	1 : 5.75
Multinodular goiter	3	36	39	40.21	1 : 12
Diffuse hyperplasia	4	8	12	12.37	1 : 2
Hashimoto’s thyroiditis	1	2	3	3.10	1 : 2
Follicular adenoma	0	7	7	7.22	All female
Carcinoma	Papillary carcinoma	1	4	5.15	1 : 4
	Insular carcinoma	0	1		
Throglossal duct cyst	1	3	4	4.12	1 : 3
Total	14	83	97	100	1 : 5.93

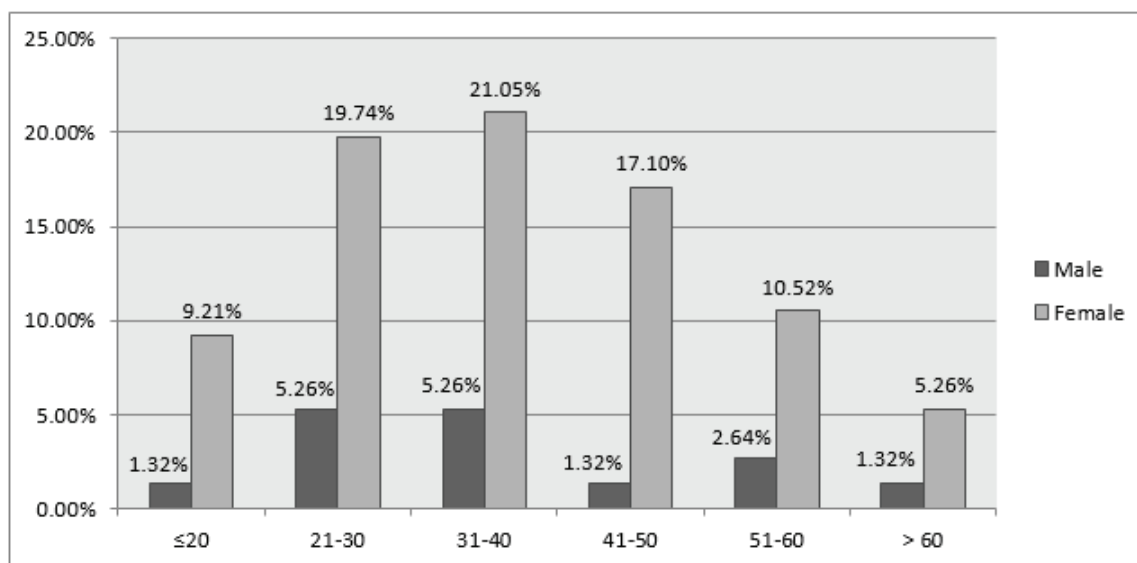


Figure 1: Age and sex distribution of thyroid diseases

Discussion

The majority of thyroid lesions were found in the third and fourth decades of life (25% and 26.31% respectively). This finding is close to the results of others in this area.^{11,12} In the present study thyroid diseases were more common in females as compared to males. The male to female ratio was 1:5.93, which consistent with many previous studies Al-Saleem (1973) and Qassim (2010) in Iraq, El-Hamel (1988) in Saudi Arabia, and other international studies, but much lower than that of AlHuraib *et al.* (1990) of Yemen who reported 39:1 ratio.^{11,13-18} This preponderance of thyroid lesions in females may be attributed to the higher demand of iodine for physiologic needs in this age group especially during puberty, pregnancy and lactation, and possibly the dietary iodine deficiency which is the case in many countries among which is Iraq.¹⁸

The most common thyroid lesion is multinodular goiter (40.21%) followed by colloid goiter (27.83%) of cases, which is comparably close to Hassan 2020 in Baghdad, and Qassim 2010 in Basra who reported 60% and 59% respectively, and also comparable to various international studies (Bekele & Osman 2006; Bukhari & Sadiq 2008; Salama *et al.* 2009).¹⁹⁻²² However, it is less than the previously reported incidence in Northern Iraq of 79%.²³ These results reflect the frequent occurrence of goiter in both endemic (North of Iraq) and non-

endemic (South of Iraq) areas. This was attributed to iodine deficiency in Northern Iraq, which is not a contributing factor here in the south, where the presence of other goiterogenic factors may explain this. Cotran *et al.* (2013) stated that, nearly all long standing simple colloid goiters become transformed into multinodular type.²⁴ This explains the high incidence of multinodular goiter in this study which account for 40.21% of all thyroid lesions. The predominance of multinodular goiter may be due to the gross disfigurement of the neck and tracheal compression accompanying this condition and leading patients to seek surgical management.²⁵

We found thyroid adenoma in 7.22% on cases which is less than figures reported in Basra province 21.5% (Qassim 2010) and also lower than figures reported in other countries e.g., in India (Bhartiya *et al.* 2014), Pakistan (Sushel *et al.* 2009), Saudi Arabia (Abu-Eshy *et al.* 1995), Nigeria (Solomon *et al.* 2015). In the present study, all cases of thyroid adenoma were females. This female dominance is comparable with the available literature worldwide.²⁶⁻²⁹

The overall incidence of thyroid malignancy is low worldwide, it accounts for (0.5-1%) of all cancers and range from (3.3%) to (17%) of all thyroid diseases.² However, in Iraq, thyroid malignancy account for (6.06%) of all registered cancers (2016) and ranks the

second most common cancer in females of our locality in (2016).⁸ In present study thyroid carcinoma constitutes 5.15% of all thyroid diseases which corresponds to the aforementioned figures. However it is less than figures registered in the same year in a nearby area Al-Anbar province (8.66%) but more than figures reported in other Iraqi provinces (Basrah-3.58%; Erbil-4.38%; Kirkuk-3.37%).⁸

In this study five cases of carcinoma were reported, four cases were of papillary carcinoma type and one case was insular carcinoma. Among the patients with malignant thyroid tumors, one patient was male and the remaining four were females.

Female dominance is comparable to worldwide reports.²⁴ Papillary carcinoma was the commonest malignant type in this study (80%). This is comparable to Cotran *et al.* (2013) of (75%) but more than Said *et al.* (1989) who reported (46%).^{24,30} Papillary carcinoma occurs most frequently in parts of the world where iodine supply is adequate. Irradiation is carcinogenic to the thyroid; it leads to 30 fold increase in thyroid cancer particularly when introduced during childhood. Almost 70% of Japanese survivors of the atomic bombs developed thyroid cancer. From the above, there is a rising incidence of thyroid malignancy in our province especially in younger age groups.³¹

In conclusions: Non-neoplastic thyroid lesions were more common than neoplastic ones. With striking female predominance in all types of thyroid diseases with male to female ratio of 1:5.93. Benign thyroid lesions were more common than malignant ones. The most common age group affected is 31 – 40 years. Multinodular goiter was the most common lesion. Papillary carcinoma was the most frequent malignancy encountered. These findings are comparable with several studies on thyroid diseases in other areas of Iraq and globally.

Recommendation, Since MNG of prolonged duration in iodine deficient areas poses a risk factor for the development of follicular carcinoma. Therefore, appropriate measures should be taken to prevent the development of MNG by public awareness programs, use of iodized salt and non-goitrogenic diet. Regular checkup of any thyroid swelling is recommended.

Ethical Clearance- Taken from the research ethics committee in Tikrit university/College of Medicine

Source of Funding- Self

Conflict of Interest - Nil

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