Tobruk University Journal for Medical Sciences (TUJMS)
ISSN No: 27892093 Volume (4): Issue June 2022

The Pattern of Thyroid Disorders in the Eastern Part of Libya: A Retrospective Study in Albieda Hospital

(Original Research Article)

Asma Aboubakr Miftah Abdalraziq[1], Raba M. Abdalkarim[2], Eman Alaqeli[3] , Mohamed Ali M Abu Sheha[4], Enas F Hesein Sanousi[5]

1.Departement of Pathology, Omar Almukhtar University, Albieda, Libya
2. Department of Pathology, Omar Almukhtar University, Albieda, Libya
3. Department of Health Services Administration, University of Benghazi, Benghazi, Libya
4. Department of Mathematics and Statistics**,** University of South Florida**,** South Florida, USA
5. Department of Medicine, Albieda Hospital, Libya

Corresponding Author: Asma Aboubaker Miftah Abdalraziq, Email address: asma.abdalraziq@omu.edu.ly, TeL: 092-7415721.

Received 12 April 2022 Accepted 27 April 2022

Abstract: Diseases involving the thyroid gland are one of the most common endocrine disorders affecting the general population. They can be non-neoplastic or neoplastic lesions. The prevalence and pattern of these disorders depend on various factors including sex, age, ethnic and geographic location mainly depending on iodine contents in the soil, water, and food supply. The present study aimed to determine the pattern of thyroid lesions in surgically resected thyroid specimens received in the pathology department of Albieda hospital -Libya and to characterize the histopathological patterns of thyroid lesions in thyroidectomy specimens among Libyan patients, and their frequency in relation to age and gender of the patients. A retrospective study was carried out and analyzed the data of 652 thyroidectomy specimens diagnosed over eleven years (2008 – 2019) at the Department of Pathology, Albieda Hospital, Albieda, Libya**.** A total of 652 consecutive thyroidectomy specimens were selected, Patient's age ranges from 11-85 years, in thyroidectomy specimens 603 females (92.4%) and 49 (7.5%) males, There were 79 (12.1%) neoplastic lesions, and 573 (87.8%) were non-neoplastic. the majority of non-neoplastic lesions is colloid goiter 476 (83%). The follicular adenoma form the most common neoplastic lesion 63(80%). 14 out of 79 neoplastic

lesions were carcinoma, the most common histological type is papillary carcinoma (14%). The peak age for thyroid malignancy was the 4th to 6th decades. Non-neoplastic thyroid lesions are more common than neoplastic ones, colloid goiter was the most common non-neoplastic lesion and papillary carcinoma is the common thyroid cancer seen in females. There was a marked female predominance in all types of thyroid diseases.

Keywords: Thyroid Diseases, Histopathology, Thyroidectomy Specimens, Libya-Albieda.

Introduction

Diseases of the thyroid gland are one of the common endocrine problems encountered in clinical practice worldwide, most of them are benign (Kochupillai N, 2000). The incidence of thyroid diseases varies from one geographical region to another, mainly depending upon iodine deficiency status (Vanderpump MP (2011). Mountainous regions are considered as an endemic for goiter as the soil, water, and food supply contain low iodine (Elahi S et a, 2005). Other risk factors for thyroid lesions include sex, age as thyroid disorders increases with age, and incidence in women are 10 times more likely than men (Bayliss R., 1982), a diet rich in goitrogens, Pregnancy, Radiation to the neck, Family history, and Smoking (Hussain N, et al, 2005). Thyroid lesions are classified into non-neoplastic and neoplastic. Non-neoplastic lesions are common and Multinodular goiter is the commonest cause (Hussain N, et al, 2005). Goitrous thyroid lesion is considered a precursor to thyroid carcinoma (Marita et al, 2008). Thyroid cancer is the commonest endocrine cancer accounting for 92% of all endocrine malignancies. the most common thyroid malignancy is Papillary carcinoma (Gurleyik E, 2016). Diagnosis of thyroid disease can be made by clinical examination, ultrasonographic examination, fine needle aspiration cytology (FNAC) of the enlarged gland, hormonal evaluation, and thyroid scan. The histopathological examination gives a definitive diagnosis in thyroidectomy specimens (Sushel C et al, 2009, Welker MJ et al, 2003) In the eastern part of Libya no similar studies have been performed, as Libya is a developed country and the resources in the health sector are inadequate, the present study aims to determine the pattern of thyroid lesions in thyroidectomy specimens received in the pathology department of Albieda hospital, Libya.

Materials and Methods

This is hospital-based research (a retrospective study) of thyroid specimens received at the Department of Pathology, Albieda Hospital, from (2008 to December 2019). All patients presenting with thyroid enlargement, who underwent any type of thyroid operation (i.e. lobectomy, subtotal thyroidectomy, or total thyroidectomy) were included in this study, cytology specimens obtained by fine-needle aspiration (FNA) were excluded. Clinicopathological and demographic data (age and sex) of all such patients were obtained from pathology reports and reviewed; different lesions were categorized, into neoplastic and non-neoplastic lesions. The non-neoplastic thyroid diseases were classified on histological grounds and grouped into six major categories: 1. colloid goiter (diffuse and multinodular goiter),2. thyroiditis (Hashimoto's thyroiditis, Lymphocytic Thyroiditis, Riddles Thyroiditis,

Granulomatous (de Quervain's).3. colloid cyst, 4. Toxic goiter, 5. Grave's disease, 6. Thyroglossal cyst. Neoplastic lesions were classified according to the third edition of the World Health Organization (WHO) classification of endocrine tumors published in 2004 (Delellis RA et al., 2004)

There were informations excluded in this study like; ethnicity/race, information on food consumption, and the correct address of the patients. Because there was a lack in the information. Data entered into the SPSS program version 22 for analysis. Frequencies and percentages were used. The study proposal was reviewed and accepted by the hospital ethical committee.

Results

A total of 652 thyroid specimens were received in the Department of Pathology, Albieda hospital, Albaida, Libya from January 2008 to December 2019. As shown in figure (1), the majority of samples were received in 2013.

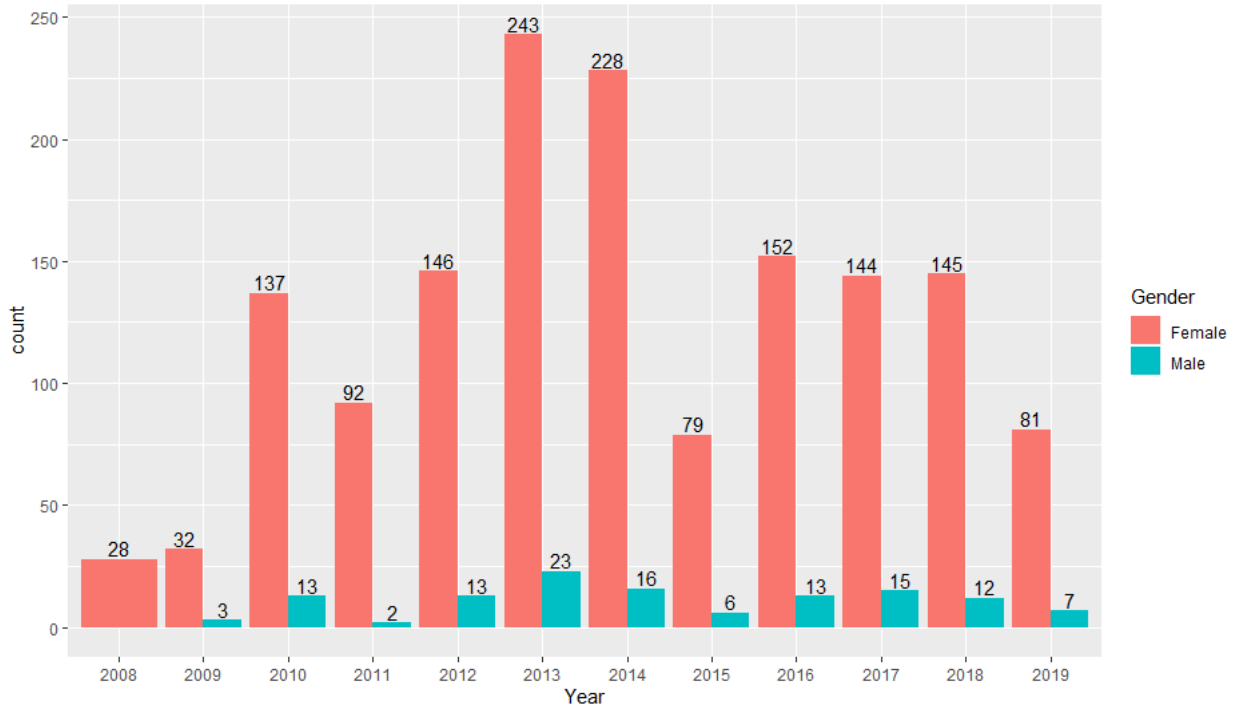

Figure : (1) The Number of Thyroid Samples Received in the Pathology Laboratory, Albida Hospital (2008-2019).

Table (1). Percentage of Histopathological Pattern of Thyroidectomy Specimens.

Category	Histologic Sub Type	NO(%)
Neoplastic	Follicular Adenoma	63 (80)
	Hurthle Cell Adenoma	1 (1.3)
	Trabecular Adenoma	1 (1.3)

	Hyalinizing Trabecular Carcinoma	1 (1.3)
	Papillary Carcinoma	11 (14)
	Medullary Carcinoma	2 (2.5)
Total		79 **(12.1%).**
Non-Neoplastic	Colloid goiter	476 (83)
	Colloid Cyst	39 (7)
	Thyroiditis	34 (6)
	Toxic Goiter	22 (4)
	Grave`s disease	1 (0.17)
	Thyroglossal Cyst	1 (0.17)
Total		573 (87.8%),

As shown in table (1) Regarding the histological pattern of our cases the majority were non-neoplastic lesions 573(87.8%), while neoplastic lesions were 79 (12.1%). Colloid goiter was the most common non-neoplastic lesion 476 (83%). The follicular adenoma form the most common neoplastic 63(80%). 14 out of 79 neoplastic lesions were carcinoma, the most common histological type is papillary carcinoma (14%) all were female.

Table (2): Proportion of Thyroid lesions in Males and Females.

I. Neoplastic Lesions	**No (%)**	**No. Female**	**No. Male**
Hurthle Cell Adenoma	1 (1.3)	1	-
Hyalinizing Trabecular Carcinoma	1 (1.3)	1	-
Follicular Adenoma	63 (80)	58	5
Papillary Carcinoma	11 (14)	11	-
Trabecular Adenoma	1 (1.3)	1	-
Medullary Carcinoma	2 (2.5)	1	1
Total (%)	79 (4.8)	73 (92.4)	6 (7.6)
II. Non-neoplastic lesions			
Colloid goiter	476 (83)	443	33
Thyroiditis	34 (6)	33	1
Colloid Cyst	39 (7)	34	5
Toxic Goiter	22 (4)	19	3
Grave`s disease	1 (0.17)	1	-
Thyroglossal Cyst	1 (0.17)	-	1
Total (%)	**573 (35.2)**	**530 (92.5)**	**43 (7.5)**

As shown in table (2), there is a female predominance found in all histological subtypes 603 (92.4%) and 49 (7.5%) males.The patient's age ranges from 11-85 years, we found a peak incidence of goiter in the third and fourth decade of life. The peak age for thyroid malignancy was 4th to 6th decades table (3).

Table (3) Age-wise distribution of different types of thyroid diseases

I. Non-neoplastic lesions	Number of Cases within each Age Group				
	0-19	20-39	40-59	60-79	80-99
Colloid goiter	9	228	202	36	1
Thyroiditis	2	12	17	3	-
Colloid Cyst	2	20	14	3	-
Toxic Goiter	-	14	8	-	-
Grave`s disease	1	-	-	-	-
Thyroglossal Cyst	-	1	-	-	-
Total	**14**	**275**	**241**	**42**	**1**
II. Neoplastic lesions					
Hurthle Cell Adenoma	-	-	1	-	-
Hyalinizing Trabecular Carcinoma	-	1	-	-	-
Follicular Adenoma	4	32	24	3	-
Papillary Carcinoma	-	4	6	1	-
Trabecular Adenoma	-	-	1	-	-
Medullary Carcinoma	-	-	2	-	-
Total	**4**	**37**	**34**	**4**	-

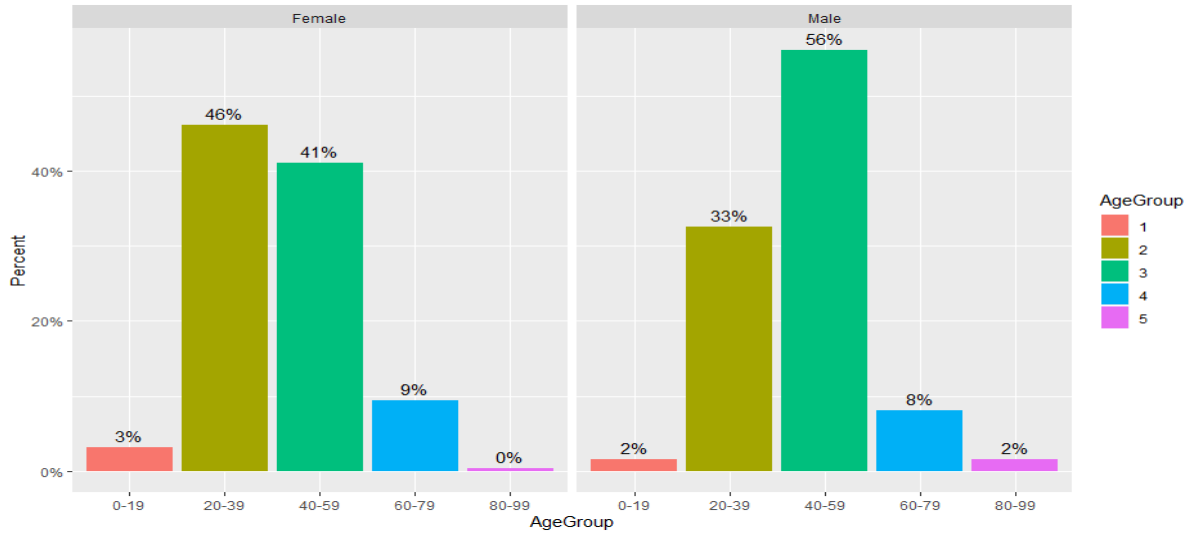

Figure (2) showed that the incidence of thyroid diseases in females occurs mainly in twenty and thirty decades and in males it was above forty.

Discussion

Thyroid disorders are common all over the world, with varying frequency and incidences depending upon iodine deficiency status (Vanderpump MP, (2011). Reported studies on thyroid disorders in Libya are few. To the best of our knowledge, this is the first such study published from the north-eastern region of Libya to the date of publication of this article.In our study, non-neoplastic diseases are more common than neoplastic lesions in thyroidectomy specimens. Our findings are consistent with other studies from across the world, that have reported that non-neoplastic lesions are more common than neoplastic lesions (Popoveniuc Get al, 2012, Chukudebelu O et al, 2012, Fahim A et al, 2012, Mirzakarimov F et al, 2012, Darwish AH et al, 2006, Salama SI et al, 2009).

Among the non-neoplastic lesions, there is an agreement in all previous studies, that nodular goiter is the commonest lesion. in an endemic area of Greece, research reported that 54.9% nodular goiter in their 264 cases of total thyroidectomies specimens (Abdulkareem KF. (2010). From Zambia, Mirzakarimov et al. (2012), in their 239 thyroid specimens found 172 cases (71.96%) of nodular goiter. Similarly, recent works from Pakistan report multinodular goiter was the commonest diagnosis in their study (Chukudebelu O, et al. 2012. Misiakos EP et al. 2006). Within the Arab world, Abdulkareem KF (2010) from Iraq report 59% colloid goiter (nodular and diffuse); while Darwish et al., (2006) from Bahrain in their 110 cases report 55 cases (45.5%) of nodular goiter and concluded as the most common in their experiences. Salama et al., (2009), studied 845 cases of thyroidectomies and found 311 cases (36.8 %) of multinodular goiter.

After the commonest diagnosis of colloid goiter we found the following breakdown of lesser frequent diagnoses: Colloid cyst and thyroiditis 7% and 6%, toxic goiter 4%.other investigators have mentioned close results. from Greece, Misiakos et al. (2006), after reporting 54.9% nodular goiter, mention 3.8% Hashimoto thyroiditis in their series of 264 cases. From Zambia, only 1.2% thyroiditis, 8.1% thyroid cysts, and 3.8% toxic goiter were reported (Mirzakarimov et al., 2012). Hussain et al. (2005), from Pakistan in their total of 662 cases, found 26 cases of thyroiditis)(Khanzada TW et al., 2011) In a study from Bahrain, after the common disease of nodular goiter, toxic goiter was found in 8% cases and thyroiditis in 7% cases (Darwish et al., 2006).

Within the neoplastic lesions, benign lesions predominated over malignant lesions in our study. follicular adenoma (80%), among the malignant, papillary carcinoma is the commonest (14%), followed by medullary carcinoma (2.5%), the least one is Hyalinizing Trabecular Carcinoma (1%). our study is consistent with Chukudebelu et al. (2012), from Ireland in their 1003 thyroidectomies found that 742 were benign lesions and 261 were malignant, of which papillary carcinomas is the commonest accounted for 75.1%. which is contrary to the findings in studies from Nigeria, in their 1,207 cases series found, 174 cases (14.4%) of thyroid gland neoplasms. Seventy-six (43.7%) cases were benign and 98 (56.3%) cases were malignant (Hussain N et al., 2005). Al-Amri (2012), studied a total of 143 patients with thyroid tumors who underwent thyroidectomy. The most common thyroid epithelial cancer was the papillary type (74%) (Ariyibi OO et al., 2013). Our results are

consistent with the international recent data regarding the predominance of papillary carcinoma.

Thyroid diseases have traditionally been known mostly to affect the female sex. in our study the majority of the cases of thyroidectomy were females (92.4%), Similar are the finding in recent literature from around the world ranging. Within the Middle East region, the study of thyroid disease from Bahrain (Darwish et al., 2006) found 76.36% females in 110 thyroidectomies, and 78.9% females in 845 thyroidectomy cases from the Western region of KSA (Salama et al., 2009). Al-Bouq et al., (2006) found 84.65% females in their total 189 cases in the study from the Madinah region (Al-Amri (2012). The results from other world countries are from 71.5% females in a study of 358 thyroidectomies from Pakistan (Fahim et al., 2012) to as high as 88.7% females from Zambia (Mirzakarimov et al., 2012), figures of 77.46% from Ireland (Chukudebelu et al., 2012), and 84.8% from Turkey (Veyseller et al 2009)

In our study of 652 thyroidectomies, we found a peak frequency of goiter in the third and fourth decade of life, similarly with the results of Al-Bouq et al (2006) from Madinah, KSA. Regarding age in the present study the non-neoplastic lesions: colloid goiter is more common in age less than the 40s, while thyroiditis is more above 40s. (Darwish et al., 2006) reported nodular with a peak at 31-40 years. The follicular adenoma is more at younger age 20-40. Whereas on the malignant side, the age range for carcinomas is (40-60) years, 6 out of 11 cases of papillary carcinoma are above 40. the study from Kazakhstan reports a peak incidence of thyroid cancer in 70 years and older population (Igissinov et al., 2011). we also reported that the incidence of thyroid diseases in female occurs at a younger age (twenty and thirty decades) while the range of ages of males are above forty.

Conclusion

The present study concluded that the histological spectrum of thyroid diseases in the thyroidectomy specimens from the Al-Beida region is closely similar to that seen around the globe. Non-neoplastic thyroid lesions are more common than neoplastic ones, with colloid goiter being the most common lesion. A follicular adenoma is the common benign tumor and papillary carcinoma is the commonest malignant lesion.In the present study, more cases are reported in females compared to males and the peak number of cases is reported in 40 to 60 age groups Since there are no open population epidemiological studies to determine the true prevalence of thyroid disease in the Albieda city/Libya. A prospective study on iodine status, autoimmunity, and goitrogens is required to further reveal the causes of this sex dominance as well as discover other possible etiological factors. This will help outline policy for prevention, early diagnosis, and management of common thyroid disorders.

Acknowledgments

The authors thank Mr Abdel azem Altalhi, head of laboratory department .Albieda hospital for her help in gathering the data**.**

References

1. Abdulkareem KF (2010). Surgical pathology of thyroid biopsies: A prospective study. Thi-Qar Medical J, 4, 47-52.

2. Al-Amri (2012). Pattern of thyroid cancer in the eastern province of Saudi Arabia: university hospital experience. J Cancer Therapy, 3, 187-91.

3. Al-Bouq Y, Fazili FM, Gaffar HA (2006). The current pattern of surgically treated thyroid diseases in the medinah region of Saudi Arabia. JK-Practitioner, 13, 9-14.

4. Ariyibi OO, Duduyemi BM, Akang EE, Oluwasola AO (2013). Histopathological patterns of thyroid neoplasms in ibadan nigeria: a twenty year retrospective study. Int J Trop Disease Health, 3, 148-56.

5. Bayliss R. (1982). Thyroid disease. The fact, Oxford University press. New York. Toronto.

6. Chukudebelu O, Dias A, Timon C (2012). Changing trends in thyroidectomy. *Ir Med J*, **105**, 167-9.

7. Darwish AH, Al Sindi KA, El Kafsi J (2006). Pattern of thyroid diseases-a histopathological study. *Bahrain Medical Bulletin*, **28**, 1-6.

8. Delellis RA, Lloyd RV, Heitz PU, Eng C.(2004). World Health Organization classification of tumours of endocrine organs. 3rd ed. Lyon: International Agency for Research on Cancer (IARC). pp. 49–123

9. Elahi S, Manzoor-ul-Hassan A, Syed Z, Nazeer L, Nagra S, Hyder S.(2005). A study of goiter among female adolescents referred to centre for nuclear medicine, Lahore. Pak J Med Sci.;21:56-62.

10. Fahim A, Qureshi A, Alvi H, Azmi MA (2012). Clinical Presentation and Evaluation of Histopathological Patterns of Hospital-based Frequency of Thyroidectomic Biopsies. *Medical Forum*, **9**, 1-6.

11. Gurleyik E, Gurleyik G, Karapolat B, Onsal U.(2016). Incidental Papillary Thyroid Microcarcinoma in an Endemic Goiter Area. J Thyroid Res. 1784397

12. Hussain N, Anwar M, Nadia N, Ali Z.(2005). Pattern of surgically treated thyroid diseases in Karachi. Biomedica.;21:18-20.

13. Igissinov N, Tereshkevich D, Moore MA, et al (2011). Age characteristics of incidences of prevalent cancers in the Aral Sea area of Kazakhstan. Asian Pac J Cancer Prev, 12, 2295-7.

14. Kochupillai N.(2000). Clinical endocrinology in India. CurrSci.;79:1061-7.

15. Khanzada TW, Memon W, Samad A (2011). An audit of thyroid surgery: The Hyderabad experience. Pakistan Armed Forces Medical Journal, 2, 1-6.

16. Maitra A, Abbas AK.(2008). The endocrine system. In, Kumar V, Abbas AK, Fausto N. (Eds.), Robbins and Cotran, Pathologic basis of disease. (PP. 1155 -1226). Elsevier Saunders

17. Misiakos EP, Liakakos T, Macheras A, et al (2006). Total thyroidectomy for the treatment of thyroid diseases in an endemic area. South Med J, 99: 1224-9.

18. Mirzakarimov F, BFK Odimba BFK, Tembo P (2012). Patterns of surgically treated thyroid disease in lusaka, Zambia. *Medical Journal of Zambia*, **39**,7-11.

19. Popoveniuc G, Jonklaas J.(2012). Thyroid nodules. Med Clin North Am.;96(2):329–49. doi:10.1016/j.mcna.2012.02.002

20. Salama SI, Abdullah LS, Al-Qahtani MH, Al-Maghrabi JA (2009). Histopathological pattern of thyroid lesions in western region of Saudi Arabia. New Egyptian JMedicine, 40, 580-5.

21. Sushel C, Khanzada TW, Zulfikar I, Samad A(2009). Histopathological pattern of diagnoses in patients undergoing thyroid operations. Rawal Med J.;34:14-6.

22. Thyroid Information, American Thyroid Association. https://www.thyroid.org/thyroid-information

23. Welker MJ, Orlov D.(2003). Thyroid nodules. Am Fam Physician;67:559-66.

24. Vanderpump MP (2011). The epidemiology of thyroid disease. Br Med Bull, 99, 39-51. doi: 10.1093/bmb/ldr030 ;18(6):988-1028.

25. Veyseller B, Aksoy F, Demirhan H, et al. (2009). Total thyroidectomy in benign thyroid diseases. Kulak Burun Bogaz Ihtis Derg, 19, 299-303.