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PATTERN OF THYROID DISEASES IN KING SALMAN HOSPITAL, RIYADH

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Abstract:

Introduction :The incidence of thyroid diseases is on the increase in Saudi Arabia, yet there are well known regional and geographical variations ***.Objectives***: This study aims at analyzing the patterns of thyroid diseases among patients who were surgically treated in King Salman hospital between 2016 and 2020.***Methods***:The records of the selected patients were studied retrospectively for the variables of age, sex, functional status, preoperative cytology and postoperative histopathology. ***Result :***Sixty-one patients were included with a female to male ratio of 3:1.The majority had benign thyroid diseases. Malignancy is more common among females. FNAC had an accuracy of 85% compared to histopathology.

INTRODUCTION:

Thyroid diseases comprise a good percentage of cases presenting to surgical outpatient clinics. Previous studies looked into the pattern of cases presenting for surgical consultation and treatment. Here we present analysis of cases who were surgically treated in King Salman surgical department in the period between March 2016 and September 2020.King Salman hospital is a secondary care public hospital in Western Riyadh city, Saudi Arabia with 300 bed capacity of which surgical department utilizes 100 beds. The department is backed up with radiology, pathology and medical endocrinology services to handle these cases.

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METHODOLOGY:

The medical records of patients who had surgical treatment for thyroid diseases in the study period were reviewed retrospectively. Information related to patients' demographics, thyroid functional status, preoperative fine needle aspiration cytology(FNAC) and final histopathology were extracted and analyzed. Patients with missing parts of the above mentioned variables were excluded.

RESULTS:

Sixty-one patients fulfilled the inclusion criteria, forty-six of whom were females with a female to male ratio of 3:1. The majority of patients (77%) were in the age group 20-50 years and none was below 20. Forty-three(70.5%) of patients had benign thyroid diseases as per their final histopathology {TABLE (1)}.

Three cases (7%) of these were autoimmune thyroiditis, three (7%) were adenomas, one case (2%) was Riedel's thyroiditis. The remaining benign pathologies were equally divided between multinodular goiter and colloid nodule(s) {TABLE (2)}. Of the eighteen malignant thyroid glands, sixteen were papillary carcinoma, one follicular carcinoma and one was Hurthle cell carcinoma. None was medullary, anaplastic or metastatic carcinoma.

Table (1): Age, sex and pathology distribution of cases.

VARIABLE	FEMALES	MALES
Age < 20 yr	0	0
Age 20-50 yr	37	10
Age > 50 yr	9	5
Benign pathology	32	11
Malignant pathology	14	4
Total	46	15

Table (2): Histological pattern of 43 benign thyroid diseases.

Histopathology	Males	Females	Total
Multinodular goiter	3	15	18
Colloid nodule(s)	6	12	18
Autoimmune thyroiditis	1	2	3
Adenoma	1	2	3
Riedel's thyroiditis	0	1	1
Others	0	0	0
Total	11	32	43

Table (3): Pathological type of 18 thyroid carcinomas.

Histopathology	Males	Females	Total
Papillary carcinoma	4	12	16
Follicular carcinoma	0	1	1
Hurthle cell carcinoma	0	1	1
Others	0	0	0
Total	4	14	18

Discussion:

There are few studies in the literature focusing on different clinical and pathological aspects of thyroid disease in different regions of Saudi Arabia and the surrounding countries. The present study considers only patients who were surgically treated for thyroid disease in King Salman hospital in the study period. As it is worldwide, our study showed a female preponderance with a female to male ratio of 3:1. In the work of Aljarbou and colleagues in central region of Saudi Arabia this ratio was 6.7:1(1) and almost 2:1 in a paper by Abdelrazik *et al* in Alkharj province, central Saudi Arabia(2),while it was 6.9:1 in western Saudi Arabia according to Siddiqui and colleagues(3).In our study there were no cases below 20 years of age. The age range was 23 to 67 and the mean age was 41.6 years. Almuzaini and colleagues found that 66.8% of their patients were in the

age group 20-50 years (4), while in Aljarbou study this age group comprises 79.3% of the cases (1) and 67.6% in the work of Siddiqui *et al*(3).

Functionally, forty-nine (80%) of our cases were euthyroid and the remainder were hypothyroid on treatment. None of the cases was hyperthyroid. This might reflect the efficacy of non-surgical treatment of thyrotoxicosis in our center as it is worldwide. This is in agreement with the findings by Aljarbou and co-workers where euthyroid status was observed in 63% of their patients (1). Likewise, Abdelrazik and colleagues observed thyroid dysfunction in only 12.9% of cases in Alkharj province (2).

Forty-three (70.5%) of our study patients had benign thyroid diseases on final histopathology. Thirty-six (84%) of these were equally divided between multinodular goiter and colloid nodules. The rest were autoimmune thyroiditis (7%), adenomas (7%) and Riedel's thyroiditis (2%). {TABLE (2)}.

In the western region of Saudi Arabia, Siddiqui and colleagues found that benign thyroid diseases constitute 92% of the cases (3), while in Madinah Munawarah, Saudi Arabia, Alboug and his colleagues found it to represent 80.5%(7). Among patients with benign thyroid diseases we found the majority (84%) were multinodular goiter or colloid nodules. Autoimmune thyroiditis and thyroid adenomas were observed in 7% each. Similar observations were made by Albasri *et al* in Madinah Munawarah, KSA (8), Aljarbou in central region (1) and Hussain and colleagues in Karachi, Pakistan(9).Sex distribution of benign diseases in our study keeps, almost, the same female: male ratio of 3:1.

In the cancer Incidence Report, Ministry of Health, Saudi Arabia and the Cancer Registry 2010, thyroid cancer was the third prevalent newly diagnosed cancer in adults after breast and colorectal cancer (10). Aljarbou and colleagues in Alkharj province estimated the prevalence of thyroid cancer at 1.1/100.000 population per year among females and 0.1/100.000 population per year among males (1). In the current study, fourteen out of the eighteen patients with thyroid cancer were females with a female to male ratio of 3.5:1. {TABLE

(3)}. This is in concordance with the ratio of 3.46:1 quoted by Aljarbou in Alkharj province(1). Almuzaini and colleagues in a nationwide study estimated this ratio to be 2.7 :1(4). In another study on the patterns of thyroid lesions in western region of KSA, Salama *et al* found the female to male ratio to be 3.5:1 for papillary carcinoma and 1.4:1 for follicular carcinoma (13). This seems to be well established worldwide. For instance, Friday and colleagues from Germany found a female to male ratio of 5.5:1 for thyroid cancer (11). The only exception to this was found in a work by Abdelrazik and colleagues in Alkharj province who found a male preponderance among patients with thyroid carcinoma with a male to female ratio of 1.6:1(2). Not only this, they also reported hyperthyroidism as the main presenting manifestation in patients with thyroid carcinoma (2). These two observations were never reported in any of the other papers cited in this study.

As reported elsewhere nationally and internationally, papillary carcinoma is the commonest histological type of thyroid carcinoma among our patients with a frequency of sixteen out of eighteen cases (88.9%), while follicular carcinoma and Hurthle cell carcinoma accounted for 11% each. We had no cases of medullary or anaplastic carcinoma, nor did we report any secondary carcinoma in any of the thyroid specimens. A similar observation was made by Aljarbou(1). Aljobri and co-workers found papillary carcinoma in 82.7% of their cases, follicular carcinoma in 9.2%, Hurthle cell carcinoma in 3.2% and lymphoma in 2% of the cases (12). Almost similar figures were quoted by Salama *et al* (13).

All patients in our study underwent preoperative Fine Needle Aspiration Cytology(FNAC) using free hand technique with an accuracy of 85% compared to the final histopathology report of thyroidectomy specimens.

FNAC is a simple, repeatable, quick and cost-effective test to aid differentiating between benign and different malignant thyroid lesions. It can be done free hand or ultrasound guided depending on size of thyroid lesions, expertise and pathologist preference. The test is well tolerated by patients with a very low morbidity. Alolayan and her colleagues studied the accuracy of FNAC in

thyroid lesions in Qassim region, KSA and found overall accuracy to be 89.5% with a specificity of 91% and a sensitivity of 71.7%(14). Pinchot *et al* reported a sensitivity of 92% for thyroid nodules larger than four cm. (15). In the current study we found the test to have a positive predictive value for thyroid malignancy in the order of 77%, a specificity of 93% and a sensitivity of 55.5%. Alolayan postulated that FNAC is more accurate in diagnosing benign cytology than thyroid malignancy (14).We believe the low sensitivity in our setup is because all aspirations are done using free hand technique which increases the chances of sampling errors. Albahkaly and colleagues studied the accuracy of FNAC in comparison to histopathology in thyroid lesions in King Abdulaziz medical city, Riyadh, KSA. They found it to have a sensitivity for thyroid cancer of 55.6%, a specificity of 88.7%, a positive predictive value of 65.2% and a negative predictive value of 84% with an overall accuracy of 79.6%(16).

Nevertheless, FNAC stood the test of time as a quick cost-effective and simple tool to plan optimum management of thyroid lesions, especially when it comes to surgical treatment.

Conclusion:

Thyroid diseases are among the commonest presentations in surgical departments of Saudi Arabia hospitals. Though there are some regional variations, thyroid diseases still show a clear female preponderance in all age groups and irrespective of the histopathological nature of the disease. In spite of its low sensitivity for thyroid malignancy, FNAC remains the standard of care in the work up of thyroid lesions. Image guided aspirations might improve the sensitivity of the test by eliminating or, at least, reducing sampling errors.

Disclosures:

The authors have nothing to disclose.

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