

## CAUSES OF GOITER IN THE ASIR REGION: A HISTOPATHOLOGICAL ANALYSIS OF 361 CASES

Saeed Ali Abu-Eshy, FRCS(Glasg); Mohammad Yahya Al-Shehri, FRCS(C);  
Abdur-Rauf Khan, MD, FCAP; Ghulam Mustafa Khan, FRCS(Ed);  
Mohammad Awadh Al-Humaidi, FRCPC, FACP; Tarik Saeed Malatani, FRCS(C)

The incidence and pattern of thyroid diseases in Saudi Arabia are not well known due to the lack of a national registry. Few studies were reported describing the pattern from non-mountainous regions of Saudi Arabia.<sup>1-4</sup> Asir is a high altitude territory and the pattern of thyroid diseases might be different. Indeed, we were struck by the unexpectedly high prevalence of malignancy in patients who underwent thyroidectomy for presumably benign goiter. We therefore decided to conduct this review in order to evaluate the pattern of surgically treated thyroid disease in the Asir area and compare it with other studies.

### Patients and Methods

Asir Central Hospital (ACH) is a referral hospital for the Asir Region of Saudi Arabia. The Department of Pathology at ACH is the main central laboratory, which receives specimens from 17 peripheral hospitals in the area. Over a period of six-and-one-half years, from January 1987 through June 1993, 361 thyroid specimens were received. The histopathological reports together with the age, sex, and nationality of the patients were reviewed. Statistical analysis was conducted using the SPSS/PC+ software package. Chi-square and Student's t-test were used at the 5% level of significance.

### Results

Among the 361 cases studied, 255 (70.6%) were Saudi nationals. The causes of goiter in surgically treated patients is shown in Table 1. The ages ranged from seven to 120 years (mean =  $35.9 \pm 13.8$  years). Female patients constituted 81.7% of this series and the female to male ratio was 4.5:1. Multinodular goiter and adenoma (solitary nodule) constituted 68.3% of the cases, the latter being

more common in young females ( $P < 0.05$ ). Toxic goiter was seen in 7.7% of patients and all of them either failed to respond or had recurrence after cessation of medical treatment. Autoimmune thyroiditis was seen in 23 (6.4%) patients, 16 of whom had Hashimoto thyroiditis (all except one were females) and the remaining seven patients had lymphocytic thyroiditis (two were males). In this series, there were three male patients (two Saudis and one Sudanese) who were diagnosed as dys hormonogenesis on the basis of high serum thyroid stimulating hormone (TSH) and diffuse hyperplasia on histopathological examination.

Thyroid malignancy was found in 47 (13%) patients and the papillary carcinoma was the most common (65.9%) followed by thyroid lymphoma (21.3%); these findings are compared with other studies in Table 2. Four patients (40%) with lymphoma had an associated Hashimoto thyroiditis. The female to male ratio in patients with lymphoma was 4:1, the age range was 45 to 120 years (mean =  $68.3 \pm 22.3$  years) and all were non-Hodgkin lymphoma.

The incidence of both benign and malignant thyroid diseases was not significantly different between Saudi and non-Saudi patients nor between males and females ( $P > 0.05$ ). The incidence of thyroid malignancy was found to be significantly higher in patients above 40 years of age, while more benign lesions are seen in those below 40 years in both sexes ( $P < 0.05$ ). A comparison of different patterns

TABLE 1. Causes of goiter in surgically treated patients in Asir region.

Histopathology	Number of Cases	N (%)
Multinodular goiter	158	(43.7%)
Adenoma (solitary nodule)	89	(24.6%)
Thyroid malignancy	47	(13.0%)
Toxic goiter	28	(7.7%)
Autoimmune thyroiditis	23	(6.4%)
Cyst in thyroid	10	(2.8%)
Dys hormonogenesis	3	(0.8%)
de Quervain's	2	(0.6%)
Riedel's thyroiditis	1	(0.3%)
Total	361	(100%)

From the College of Medicine (Drs. Abu-Eshy, Al-Shehri, Abdur-Rauf Khan, Al-Humaidi, Malatani) King Saud University, Abha Branch and the Department of Surgery (Dr. Khan), Asir Central Hospital, Abha.

Address reprint requests and correspondence to Dr. Abu-Eshy: P.O. Box 54, Abha, Saudi Arabia.

Accepted for publication 18 May 1994.

TABLE 2. Comparison of the distribution of thyroid malignancies in different studies.

Histopathology	Current Study N (%)	Mofti et al. [4] Riyadh	Johansen & Woodhouse [20] Riyadh	Al-Tameen et al. [12] Riyadh	Al-Hureibi et al. [10] Yemen	El-Hamel et al. [11] Libya
Papillary carcinoma	31 (65.9%)	30 (66.6%)	192 (84%)	51 (63%)	28 (47.4%)	28 (46.6%)
Lymphoma	10 (21.3%)	0 (0)	-	1 (1.2%)	-	-
Medullary carcinoma	2 (4.2%)	2 (4%)	11 (5%)	3 (3.7%)	3 (5%)	2 (3.3%)
Follicular carcinoma	2 (4.2%)	10 (22%)	12 (5%)	24 (29.6%)	17 (29%)	27 (45%)
Anaplastic carcinoma	2 (4.2%)	3 (7%)	13 (6%)	2 (2.5%)	11 (19%)	3 (5%)
Total	47 (100%)	45 (100%)	228 (100%)	81 (100%)	59 (100%)	60 (100%)

TABLE 3. Comparison of the pattern of thyroid diseases in different studies.

Country	Author(s)	No. of Patients	MNG*	Adenoma	Toxic Goiter	Auto-immune	Malignant
Saudi Arabia - Riyadh	Kona <sup>2</sup> & Al-Mohareb	172	38.4%	12.2%	9.9%	9.3%	25.0%
Saudi Arabia - Riyadh	Mofti et al. <sup>4</sup>	158	31.0%	30.0%	5.0%	3.0%	29.0%
Saudi Arabia - Riyadh	Al-Tameem <sup>3</sup>	380	28.1%	27.3%	14.7%	6.6%	21.3%
Saudi Arabia - Jeddah	Nasr <sup>1</sup>	-	60.0%	8.7%	10.2%	-	14.5%
Yemen	Hureibi et al. <sup>10</sup>	282	33.7%	49.0%	1.0%	-	3.9%
Ethiopia	Mengistu <sup>21</sup>	373	22.3%	23.6%	43.7%	1.2%	0.3%
Libya	Elhamel et al. <sup>11</sup>	618	44.5%	32.5%	9.5%	3.7%	9.7%
Saudi Arabia - Asir	Current study	361	43.7%	24.6%	7.7%	6.4%	13.0%

\*=multinodular goiter.

of surgically treated thyroid diseases reported from some countries and regions of the Kingdom is shown in Table 3.

### Discussion

The Histopathology Laboratory in ACH receives specimens from 17 peripheral hospitals in the region and this, we think, would perhaps reasonably represent the pattern of surgically treated thyroid diseases of the Asir area.

The reported incidence of malignancy in surgically treated thyroid swellings varies widely from one geographical area to the other.<sup>1-9</sup> It is higher in our study (13%) than that reported from the USA (5.8%), South Africa (5.4%), Yemen (3.9%), and Libya (9.7%).<sup>7,9-11</sup> Three studies from Riyadh reported a strikingly high incidence ranging from 21% to 29%,<sup>2-4</sup> while Nasr<sup>1</sup> from Jeddah reported a similar incidence (14.5%). However, a high percentage of thyroid lymphoma (21.3%) was found in our study when compared to other studies; an incidence of 1.2% to 3.5% was reported from Riyadh<sup>12,13</sup> and a similar percentage (<5%) was reported from the Lahey Clinic experience.<sup>14</sup> Non-Hodgkin lymphoma of the lymphoid tissue was reported by Khan et al. to be the third most frequent cancer in the Asir Region for unknown reasons.<sup>15</sup> Our findings agree with the international figures regarding the association of thyroid lymphoma with Hashimoto thyroiditis (40% in our study) and its predominance in females in the older age group.<sup>16</sup>

The cause of thyroid carcinoma is not known but there are some known predisposing factors. Head and neck

irradiation in childhood is a known predisposing factor,<sup>8,17</sup> mainly for papillary type, but none of our patients had irradiation history. There is also experimental evidence suggesting an association between prolonged high levels of TSH and thyroid follicular adenoma and carcinoma.<sup>18</sup> Moreover, iodine-deficient areas are known to have a high frequency of follicular carcinoma.<sup>19</sup> Being a mountainous area, the Asir region may be thought to be an iodine-deficient area; however, only 4.2% of patients in the current study had follicular carcinoma. Belfiore et al.<sup>19</sup> had also shown that the frequency of thyroid cancer as a whole is lower in patients living in iodine-deficient areas. To our knowledge, the iodine content of water and food in the Asir area has not been evaluated before and we think that such a study is highly recommended. The interesting difference between the different reports from Saudi Arabia could be explained by the difference in referral patterns between different institutions. Tertiary care hospitals will probably have a high incidence of malignancy because some patients with benign disease will be taken care of at their regional hospitals. The difference in indications for surgery as well as the expertise of fine needle aspiration biopsy between different hospitals are some other factors to explain this difference.

In conclusion, we would like to emphasize, on the basis of the high rate of thyroid malignancy reported in our study and other studies from different regions of the Kingdom,<sup>1-4</sup> that conservative management of goiter should be undertaken very cautiously and that fine needle aspiration biopsy and close follow-up are mandatory should such an approach be decided upon. Surgical treatment

should not be delayed if there is any doubt about the diagnosis.

### Acknowledgment

We gratefully acknowledge the help of Prof. Ahmed Ibrahim, Chairman, Department of Surgery, College of Medicine, Abha and Prof. Ajao who critically reviewed this paper and provided invaluable suggestions. We would like to thank Dr. Ahmed Mahfouz, Department of Family and Community Medicine for helping us in the statistical analysis and Dr. Abdul-Aziz Al-Saigh, Dr. C. L. Batachan and all consultant surgeons in Asir Central Hospital for allowing us to review their cases. Acknowledgment is also accorded Mr. Nestor B. Buena for preparing the manuscript.

### References

1. Nasr HA. Surgically treated goiter at King Abdulaziz University Hospital, Jeddah, Saudi Arabia. 8th Saudi Medical Conference, 1983 (Abstracts). King Khalid Academy, Riyadh, 1983;78.
2. Kona S, Al-Mohareb A. The surgery of goiter in Riyadh Armed Forces Hospital. Saudi Med J 1988;9:617-21.
3. Al-Tameem MM. The pattern of surgically treated thyroid disease in two general hospitals in Riyadh. Saudi Med J 1987;8:61-6.
4. Mofiti AB, Al-Momen AA, Suleiman SI, Jain GC, Assaf HM. Experience with thyroid surgery in the Security Forces Hospital, Riyadh 1991;12:504-6.
5. Colcock BP, King ML. The mortality and morbidity of thyroid surgery. Surg Gynec Obst 1962;114:131-6.
6. Alagaratnam TT, Ong GB. Carcinoma of thyroid. Br J Surg 1979;66:558-61.
7. Sheild JA, Farringer JL. Thyroid cancer. Am J Surg 1977;133:211-5.
8. Socolow EI, Hashizume A, Neriishi S, Nitani R. Thyroid carcinoma in man after exposure to ionizing radiation. N Engl J Med 1963;268:406-10.
9. Samson ID. Thyroid disease in the Johannesburg Urgan. Bantu S Afr J Surg 1972;10:167-70.
10. Al-Hureibi AA, Qirbi AA, Basha YB. Thyroid swelling in the Yemen Arab Republic 1990;11:203-7.
11. Elhamel A, Sherif IH, Wassef SA. The pattern of thyroid disease in a closed community of 1-1/2 million people. Saudi Med J 1988;9:481-4.
12. Al-Tameem MM. Thyroid malignancy in two general hospitals in Riyadh. Saudi Med J 1987;8:67-72.
13. Koriech OM, Al Kuhaymi R. Thyroid cancer: clinicopathological study of 113 cases in Saudi Arabia. Saudi Med J 1988;9:188-93.
14. Rossi RL, Nieroda C, Cady B, Wool MS. Malignancies of the thyroid gland, the Lahey Clinic experience. Surg Clin N Am 1985;65:211-29.
15. Khan AR, Hussain NK, Al-Saigh A, Malatani T, Sheikha AA. Pattern of cancer at Asir Central Hospital, Abha, Saudi Arabia. Ann Saudi Med 1991;11:285-8.
16. Cuschieri A, Giles GR, Moossa AR. "The Thyroid", Gunn A, ed. Essential Surgical Practice, 1st ed. Bristol; Wright PSG 1982;841-2.
17. Duffy BJ, Fitzgerald PJ. Thyroid cancer in childhood and adolescence. Cancer 1950;3:1018-32.
18. Axelard AA, Leblond CP. Induction of thyroid tumors in rats by low iodine diet. Cancer 1955;8:339-67.
19. Belfiore A, LaRosa GL, LaPorta GA, et al. Cancer risk in patients with cold thyroid nodules: relevance of iodine intake, sex, age, and multinodularity. Am J Med 1992;93:363-9.
20. Johansen K, Woodhouse NJY. Thyroid cancer in Saudi Arabia. Saudi Med J 1992;13:340-3.
21. Mengistu M. The pattern of thyroid diseases in adult Ethiopians and experience in management. Ethiop Med J 1993;1:25-36.