The Professional Medical Journal
www.theprofesional.com

DOI: 10.29309/TPMJ/18.4132

ORIGINAL PROF-4132

THYROID DISORDERS;
SPECTRUM OF THYROID DISORDERS AN EXPERIENCE IN GUJRANWALA REGION OF PUNJAB

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Article received on:
23/06/2017
Accepted for publication:
15/01/2018
Received after proof reading:
04/05/2018

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ABSTRACT… Objective: to study the spectrum of various thyroid disorders presenting in peripheral teaching hospitals of Gujranwala region. **Study Design:** Descriptive, Cross sectional, Interventional. **Setting:** Department of Surgery Islam Teaching Hospital Sialkot & Surgical Department of Aziz Bhatti Shaheed (Teaching) Hospital. Nawaz Sharif medical College, University of the Gujrat. **Study Period:** February 2011 to June 2016. **Results:** A total of 236 patients of all age groups with thyroid gland disorders were enrolled in this study. Majority of patients were of middle age group with mean age of 43+ years. Male to female ratio was 1:4. Nodular thyroid enlargement was the commonest presentation. Solitary thyroid nodule was the commonest variant of nodular goitre seen in 48.52% cases. Thyroid carcinoma was found in 36.45% cases among the nodular goitres. **Conclusion:** Thyroid disorders are common in hilly areas of Pakistan, more common in female population. High prevalence thyroid malignancy in population of the Gujranwala Division of Central Punjab is an alarming and worrisome finding in our study. Larger multicenter studies are suggested in this particular region to know the exact incidence, predisposing factors/ carcinogens etc if any responsible for thyroid malignancies in this region.

Keywords: Thyroid disorders, cancer, nodular goitre, dysfunction Thyroid

Article Citation: Jahan S, Rouf A, Aziz S, Ateeq M. Thyroid disorders; spectrum of thyroid disorders an experience in Gujranwala region of Punjab. Professional Med J 2018; 25(5):691-695. **DOI:**10.29309/TPMJ/18.4132

Diseases of the thyroid gland are among the second most prevalent endocrine disorders after diabetes mellitus worldwide. Thyroid disorders affect all age groups and either gender has high prevalence particularly in South Asian population due to iodine deficient diet. WHO reported that, iodine deficiency disorders is a major health problem among the pregnant and young women.[1]

Pakistan is no exception. Approximately 300 million people in the world are suffering from thyroid diseases. In Pakistan no data is available regarding prevalence of thyroid diseases in general population. Due to more awareness and availability of more diagnostic facilities more cases of various thyroid disorders are being diagnosed.

Environmental factors like various goitrogen substances and genetic factors also an important cause of thyroid disorders in addition to iodine deficient diet.[1]

The spectrum of thyroid disorders range from a condition of hypothyroidism to hyperthyroidism (under & over active respectively) The biochemical clinical classification of thyroid disorders includes primary disorders due to dysfunction of thyroid gland itself such as primary hypo/ hyperthyroidism. Secondary thyroid disorders are due to diseases of the pituitary gland. Tertiary thyroid disorders are due to hypothalamic disorders includes tertiary hypo / hyperthyroidism.[2]

Thyroid disorders may present in different ways in terms of structural and functional abnormalities. There may be diffuse swelling of the whole gland, solitary nodule of the gland, dominant nodule with subclinical nodularity with or without having functional abnormalities of the thyroid gland. Malignant thyroid nodules are not uncommon in goiter prone regions, however clinical thyroid cancer is uncommon. The estimated incidence of clinical thyroid carcinoma in the various part of the world is 0.5 to 10 cases per 100,000 persons[2].

It accounts roughly for about 0.5% of all cancers in men and 1.5% of all cancers in women. The thyroid tumor is the most common endocrine tumor and may present either as solitary nodule in the setting of an entirely normal thyroid gland, or it may present as a dominant nodule in the setting of a multinodular goiter. Five to 6.5% of nodular thyroid are found to be neoplastic.[3,4,5]

'Thyroid incidentalomas' is a term given to thyroid nodules discovered by imaging investigations in individuals who are asymptomatic for thyroid disease.[6,7] Thyroid nodule may be functional when it is over producing thyroid hormones (Toxic) and nonfunctional when there is no over production of thyroid hormones. Toxicity of thyroid nodule invariably excludes malignancy in more than 95% cases.

Structural abnormalities of thyroid gland can be readily evaluated with confidence by clinical examination of gland supplemented with investigations like ultrasonography and radio isotope scan, however to assess the functional status and activity of gland estimation of free TSH, T3, & T4 hormone levels is essential to confirm diagnosis and monitor the treatment outcome. Thyroid antibodies estimation is done in selected patients.

District Gujrat and Sialkot is a rural district located between the tertiary of river Chanab & Jhelum. On side Gujrat is connected with Hilly areas of District Bhimber of Azad Jammu & Kashmir. This area has high prevalence of thyroid disorders due to its geographical location, therefore, a study was planned to find the spectrum & prevalence of various thyroid disorders in different age a sex groups in population of District Gujrat and adjacent area.

MATERIAL AND METHODS

This descriptive study was conducted jointly at one public sector teaching hospital and a private teaching hospital of District Gujrat and District Sialkot respectively, from February 2011 to June 2016 at Aziz Bhatti Shaheed Teaching Hospital Gujrat & Islam Teaching hospital Sialkot. Aziz Bhatti Shaheed (Teaching) Hospital Gujrat (ABSTH) is a tertiary care hospital affiliated with Nawaz Sharif Medical College, University of the Gujrat. Islam teaching hospital is a privately based hospital affiliated with Islam Medical College Sialkot. Surgical departments of both teaching medical institutes are accredited with College of Physicians & Surgeons of Pakistan for post graduate training in General Surgery.

Geographical location of Gujranwala Region

The patients of all age groups and either gender during the study period presented with thyroid disorders were included in the study. Epidemiological data of the patient and clinical data of thyroid gland both structural and functional status was recorded in a preformed performa by thorough history and examination. Clinical examination was supplemented with thyroid ultrasonography / Radio isotope scan for structural evaluation of the thyroid gland. Functional assessment of thyroid gland was done with estimation of free TSH, T3 & T4 hormone. Malignancy was proved histologically by FNAC of solitary cold nodules and suspicious nodules in multinodular gland. Base line and other patient specific investigations were done and treatment plan was formulated and offered to the patient according to the diagnosis.

Data was reviewed, interpreted in terms of various epidemiological and clinical variables and, results were formulated and compared with national and international literature.

RESULTS

Serial No	Age group	Number of patients	% age
1	10-20 years	30	11.02%
2	21-30 years	72	26.47%
3	31-40 years	98	36.02%
4	41-50 years	40	14.70%
5	51-60 years	12	04.41%
6	61- 70 years	14	05.14%
7	71 years & above	06	02.20%

Table-I. Breakup of the total patients on the basis of age group: Total N= 236

Male	Female	Male: Female Ratio
63	173	1:4

Table-II. Break up of thyroid disorders on gender basis: Total N= 236

Diffuse thyroid enlargement	Solitary nodule thyroid	Multinodular thyroid gland
52 (21.32%)	132 (48.52%)	72 (26.47%)

Table-III. distribution on the basis of Morphology of the thyroid gland: Total N=236

Hyperthyroidism			Hypothyroidism		Euthyroid	
46 (16.91%)			48(31.76%)		178(65.44%)	
Diffuse	Nodular	Toxic Adenoma	Diffuse	Nodular	Diffuse	Nodular
12 (26.08%)	32(69.56%)	02(04.34%)	26(54.16%)	22(45.83%)	58 (32.2%)	120(67.4%)

Table-IV. Break up of patients on the basis of functional status of thyroid gland: n =236

Colloid n=186	Differentiated thyroid carcinoma n=78		Undifferentiated thyroid carcinoma n=08	
186(86.91%)	Papillary CA	Follicular CA	Anaplastic CA	Hurthle Cell CA
	62(72.09%)	16(18.60%)	04(04.65%)	04(04.65%)

Table-V. Break up thyroid disorders on the basis of FNAC: Total n=178 (Excluding 58 cases of diffuse thyroid enlargement)

Total cases= 236	Benign lesions = 150 63.55%	Malignant lesions= 86 36.45%

Table-VI. Break up %age of malignancy of thyroid gland:

DISCUSSION

The spectrum of thyroid disorders were assessed in Gujranwala region of northern Punjab. The patient from two districts namely Sialkot, and Gujrat were included in this study. District Sialkot located at the bank of rivers Chanab and Tawi originating from Indian Jammu Kashmir. District Gujrat is located between river Jhelum and Chanab. Catchment area of both districts includes patients coming from hilly area of Azad Kashmir adjacent to Indian occupied Jammu district of Kashmir. Iodine deficiency is prevalent in this areas of Pakistan namely in District Bhimber and Bajwat sector near hilly area of Indian occupied Jammu.

Goiter is a diseases which involve any age group and more prevalent in female gender, however prevalence of different thyroid diseases progressively increases with age, being 16.0% in children and 59.8% in adults.[8,9,10] The age distribution among our patients also follows the same pattern, maximum incidence was between age range of 20 to 50 years.

In present study there were total 236 patients in age group of 10 t0 71 years. Among 173 were female showing female to male ratio of 4:1. These findings are consistent with another study conducted in Nigeria.[11] The maximum number of our patients fall in age group of 31-40 years. (36.02%). This finding is contrary to the findings in other studies mentioning that thyroid disorders increases with age and more in old age. But our findings are consistent with some other studies mentioning that thyroid disorders are more common in middle age group.

Thyroid disorders are more in younger age group in patient having diabetes type I.[11,12]

In our study, diffuse thyroid enlargement was seen in 52 (21.32%) patients, 72 patients had multinodular goiter, whereas prevalence

of solitary thyroid nodule was very high. 132 (48.52%) patients out of total 236 had solitary nodule of thyroid. 45.83% patients with nodular goiter were biochemically hypothyroid in our study. Most of the patients with diffuse and multinodular goiter were euthyroid clinically and biochemically. Hyperthyroidism both clinical and biochemical was seen in 46 (16.91%) patients out of that only 02 patients had toxic adenoma.

High prevalence of Thyroid malignancy specifically differentiated thyroid carcinoma in our study was area of concern and an alarming finding for us in this region. Out of total 178 nodular goiters 86 patients had thyroid malignancy. Papillary carcinoma of thyroid (72 patients) 62% among thyroid malignancy, was the commonest Differentiated thyroid carcinoma (DTC) found on histopathology of specimen followed by follicular 18.60%. Anaplastic and Hurthle cell tumor ware seen in 4.65% of both undifferentiated types of carcinoma of thyroid. Overall malignancy rate in our study was 36.45% (86/236) which is very high.

In our patients we very occasionally found large / mega goiters as seen in iodine deficient hilly areas of Northern region of Pakistan. Most of our patients had small nodules with suspicious consistency that came out to be one of DTC on biopsy. Reason of this high prevalence of thyroid malignancy in this area might be due to unidentified factors/ carcinogens in this region. Pollution of under water reservoir toxins from lather tanneries industry and injudicious use of pesticides in agriculture may be the factor responsible for high prevalence of thyroid malignancy in this region which is famous as an industrial and agricultural tringle made by three districts of the division, Sialkot, Gujranwala and Gujrat situated in the territory two rivers.

In a local study conducted in Agha Khan University Hospital Karachi by L.M. Zuberi, et al[13] also found that papillary carcinoma of the thyroid was found in 2/3 of their total patients having differentiated thyroid carcinoma. Most of the patients in whom thyroid malignancy found presented with solitary nodule whereas in study by L.M. Zuberi et al[13] it was more common in long standing multinodular goiters. (27.8%) However as a whole majority of our patients presented with thyroid nodules whom thyroid malignancy was found, this finding is comparable with a local study conducted in Agha Khan University Hospital Karachi.[13,14,15]

This is true that incidence of thyroid cancers has almost doubled in recent years and over 60,000 people were diagnosed in the US in 2015.[16,17] The high prevalence of thyroid malignancy in our patients of this particular geographical region is matter of great concern. This needs to be investigated to find out the various predisposing factors / carcinogens responsible for high prevalence of thyroid malignancy in this region.

On the basis of our experience of thyroid disorders in this particular region of the central Punjab, we suggest that Fine needle aspiration cytology (FNAC) of all solitary and suspicious/ dominant thyroid nodule should always be performed to have cyto-pathological diagnosis preoperatively for definitive surgical intervention. Secondly all the thyroid specimens must be subjected to histopathological examination for definitive tissue diagnosis and management plan[18,19].

CONCLUSION

Thyroid disorders are common in hilly areas of Pakistan, more common in female population. High prevalence thyroid malignancy in population of the Gujranwala Division of Central Punjab is an alarming and worrisome finding in our study. Larger multicenter studies are suggested in this particular region to know the exact incidence, predisposing factors/ carcinogens etc if any responsible for thyroid malignancies in this region. FNAC of solitary and suspicious thyroid nodule should be the essential preoperative practice to chart out management plan.

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2	Abdur Rouf	Review of literature	
3	Sajid Aziz	Review of literature	
4	Muhammad Ateeq	Drafting of script / Discussion final review