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GOITER;

PREVALENCE AND COMPARISON OF GOITER IN DIFFERENT TALUKAS OF DISTRICT SUKKUR, SINDH, PAKISTAN

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ABSTRACT… Objectives: The object of this study was to observe prevalence of Goiter disorder and to classify the Goiter patients regarding sex, age and find various conditions of goiter patient in different talukas of district Sukkur, Sindh, Pakistan. **Introduction:** Thyroid gland is the largest organ of the endocrine system, located in the region of neck. Thyroid disease is a condition that disturbs the function of the thyroid gland. Over activity of thyroid gland to release excess quantity of hormones is called hyperthyroidism and under activity of thyroid gland to release less quantity of hormones is called hypothyroidism. Enlargement or swellings in the neck region resulting from goiter disorder of the thyroid gland. Goiter is caused due to iodine deficiency as seen in more than 90.54% cases worldwide. Hypothyroidism and hyperthyroidism are two condition that can develop goiter disorder. **Study Design:** Prospective study was carried out through a questionnaire. **Setting:** Different Taluka Hospitals of District Sukkur, Sindh, Pakistan. **Period:** January-2017 to March-2017. **Methodology:** The data was collected from 57 patients in different taluka hospitals of district Sukkur. The collected data includes interviewing of patients and their Physicians, review of their biochemical tests to check levels of; T3, T4 and TSH and their radiological features (thyroid scan). Recorded data was related to age, gender, body mass (weight), life style and family history. **Result:** The highest prevalence of goiter was observed in Anwar Piracha hospital 45%, Civil hospital Sukkur 14 %, Red Crescent hospital 8.8 %, Sukkur hospital 7.0 %, Taluka hospital Panoaqil 5.3 %, Taluka hospital Rohri 5.3 %, and Al-khair hospital 3.5 %. In these areas, the ratio of female patients (94.7 %) was greater than ratio of male patients (5.3%). In our study it was observed that the female patients were greatly affected from the age of 25-50 years as compare to male patients. The patients with hypothyroidism were observed in high percentage (24.6%) and high percentage in cold nodule in (left and right lobe) (17.5%) as compare to other goiter conditions. **Conclusion:** This study concludes that the goiter disease is present at an alarming level in different talukas of district Sukkur Sindh Pakistan. Therefore, proper actions should be taken to control goiter disorder in district Sukkur, Sindh, Pakistan.

Key word: Thyroid, Goiter, Hyperthyroidism, Hypothyroidism, Radiology Features, District Sukkur.

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INTRODUCTION

Thyroid gland is the largest gland of endocrine system, it is first recognizable at about one month of parental life.[1] Thyroid gland is a butterfly or H shaped and is composed of two lobes that are connected through a median isthmus. The average height of thyroid gland is about 12-15 mm, which covers the second to fourth tracheal rings.[2,3] The normal adult thyroid gland weights about 10-25g.[4] The right lobe of thyroid gland is more vascular than the left lobe of thyroid.[1] The thyroid gland controls protein synthesis and as well as body sensitivity to other hormones. It produces hormone Triiodothyronine (T3) and Thyroxine (T4). These hormones maintain the metabolic process and growth. These hormones are synthesized from tyrosine amino acid and iodine.[5]

Over production or secretion of thyroid hormones leads to thyroid disorders.[6] Enlargement or swelling of neck is resulting from goiter disorder in thyroid gland mean that thyroid gland is not functioning proper way.[7] Over activity of thyroid gland to release excess quantity of hormones is called hyperthyroidism and under activity of

thyroid gland to release less quantity of hormones is called hypothyroidism.[6] Worldwide, more than 90.54% of cases of goiter are sourced by iodine deficiency.[7,8] Iodine is an essential component of the maintained life process for normal thyroid hormone activity, specifically T3 and T4 formation. Increased or decreased amount of both hormones are T3 and T4 cause thyroid disorder.[9,10,11,12]

Different conditions of goiter disorder are toxic or non-toxic, endemic or non-endemic, and diffuse or nodular. Peoples around (500-600 million) are affected of nodular goiter in worldwide.[13] Environmental and Genetic factor affect goiter disorder; environmental factors are goitrogens in food and drinking water and genetic factors are family history (generation to generation).[14] Symptom of hyperthyroidism are palpitations, nervousness, tachycardia, tremor, adrenergic stimulation: increased blood pressure, and heat intolerance.[15,16] Symptom of hypothyroidism are decreased appetite, lethargy, fatigue, weight gain, dry skin, hair loss, sleepiness, and loss of energy.[17]

The prevalence of goiter was reported in the first global estimate in 1980 by WHO (world health organization) it estimated 20-60% of the world's population.[18] Pakistan is the one of most severely iodine deficient countries in the world (Planning Commission 2011).[19] The Chinese Tang Dynasty doctors (618-907) were the first to treat patients with eyelashes using the iodine-rich thyroid gland of animals such as sheep and pigs - in the form of raw, pills or powder as mentioned in the book of Zhen Quan (died in 643) as well as in other books.[20,21]

METHODOLOGY

The data was collected from different taluka hospitals of district Sukkur, Sindh, Pakistan from January 2017 to March 2017. The prospective study was carried out through a questionnaire. The questionnaires were filled by interview of patients and their Physicians, review of their biochemical tests to check levels of; T3, T4 and TSH and their radiological features (thyroid scan). The questionnaires contained the information that was related age, gender, weight, life style and dietary history. The data of prospective studies of goiter was collected from the patients admitted or visiting OPD ward in government or private Hospitals of district Sukkur, Sindh, Pakistan. The collected data was analyzed using Microsoft excel 2010 and SPSS computer software.

RESULT

This prospective study included 57 patients having goiter disorders in different talukas of district Sukkur, Sindh, Pakistan. Patients were examined for prevalence and comparison of goiter disorders. The study was carried out from January 2017 to March 2017. The Frequency and Percentage of different goiter disorders was measured and age wise prevalence was higher in age group 26-50 years with 70.2 % (40 patients out of 57) than age group 1-25 years which were 22.8 % (13 patients out of 57) and lowest percentage age group in 51-75 years (4 patients out of 57) (Table-I).

Age in Years	Frequency (No of Patient)	Percentage %
Age 1 to 25	13	22.8
Age 26 to 50	40	70.2
Age 51 to 75	4	7.0
Total	57	100

Table-I. Age wise distribution of patients into groups

Percentage of female patients was greater than male patients. Out of 57 patients54 (94.7 %) were females and 3 (5.26%) were males. The table number II shows about females and males involved in different disorders of thyroid gland. The maximum number of female patients was in hypothyroidism and minimum number of patients was in cold nodule inside isthmus and multi-nodular goiter and mostly common condition found in males was euthyroidism (Table-II and III).

Table number IV. Shows about result of thyroid functioning test of goiter patients where the cases suspected iodine deficiency were 26 patients (45.6%), Under production of TSH 16 patients (28.1%), Over production of TSH 8 patients (14.0%), Over production of thyroxine 4 patients (7.0%) and Over production of thyroxine and TSH 3 patients (5.3%) (Table-IV).

We also wanted to know if family involvement in the develop of thyroid disorders and we found that family was involved in 10 patients (17.5%) and no Family involvement 47 patients (82.5%) (Table-V).

Our study also included to find out the hospital wise number of patients visiting different hospitals of district Sukkur, Sindh, Pakistan. Mostly patients were admitted in Anwar Piracha Hospital 26 patients (45.6%) because there is specially Ear, nose, and throat (Ent) ward, Civil Hospital Sukkur 8 patients (14%), Hira Medical Centre Sukkur 5 patients (8.8/5), Red Cresent Hospital Sukkur 5 patients (8.8%), Sukkur Hospital Sukkur 4 patients (7.0%), Taluka Hospital Panoaqil 3 patients (5.3%), Taluka Hospital Rohri 3 patients (5.3%), Al-khair Hospital Sukkur 2 patients (3.5%) and lowest prevalence of goiter patient was in taluka hospital Salehpat (1%) during time period January 2017-march 2017 (Table-VI).

Conditions of Thyroid Patients	Female	Male	Total
Advice to thyroid test	6	1	7
Cold nodule in left and right lobe	10	0	10
Cold nodule inside isthmus	1	0	1
Diffuse toxic goiter	4	0	4
Euthyroidism	3	2	5
Hyperthyroidism	8	0	8
Hypothyroidism	14	0	14
Multi-nodular goiter	1	0	1
Multi-nodular goiter with cold nodule in left lobe	2	0	2
Multi-nodular goiter with cold nodule in right lobe	3	0	3
Solitary nodule in right lobe	2	0	2
Total	54	3	57

Table-II. Different disorder conditions of thyroid gland in males and females

Gender	Frequency (No of patients)	Percentage%
Female	54	94.7
Male	3	5.26
Total	57	100

Table-III. Gender wise distribution

Activity of thyroid gland	Frequency	Percentage%
Suspected Iodine deficiency	26	45.6
Over production of thyroxine	4	7.0
Over production of thyroxine and TSH	3	5.3
Over production of TSH	8	14.0
Under production of TSH	16	28.1
Total	57	100

Table-IV. Activity of thyroid gland

History of patients	Frequency (No of patients)	Percentage %
Family involved	10	17.5
No family involved	47	82.5
Total	57	100

Table-V. Family history of patients

Hospital Names	Frequency (No of patients)	Percentage %
Al-khair Hospital Sukkur	2	3.5
Anwar Piracha Hospital Sukkur	26	45.6
Civil Hospital Sukkur	8	14
Hira Medical Centre Sukkur	5	8.8
Red Cresent Hospital Sukkur	5	8.8
Sukkur Hospital Sukkur	4	7.0
Taluka Hospital Panoaqil	3	5.3
Taluka Hospital Rohri	3	5.3
Taluka Hospital Salehpat	1	1.8
Total	57	100

Table-VI. Hospital wise distribution of patients

DISCUSSION

The prospective study was carried out in different taluka hospitals of district Sukkur, Sindh, Pakistan. Our study results show about prevalence and comparison of goiter disorder during January

2017 to March 2017.[23] The present study show highest prevalence of goiter in female with 94.7% (54 patients out of 57) and male 5.26% (3 patients out of 57) similar results were already shown in literature where females with 87.5% (70 patients out of 80) and male with 12.5% (10 patients out of 80).[23] The age wise prevalence was higher in age group 26-50 years that was 70% (40 patients out of 57) and lowest age group 51-75 years that was 7.0 % (4 patients out of 57) as shown in literature age wise prevalence was higher in age group 31-50 years that was 85.1%(80 patients out of 94) and lowest age group >60 years that was 1.0% (01 patient out of 94).[24] The higher prevalence of hypothyroidism was in females 24.6% (14 patients out of 57), cold nodule in left and right lobe in females 17.5% (10 patients out of 57), hyperthyroidism in females 14.0% (8 patients out of 57) and euthyroidism was found in males 3.2% (2 patients out of 57) but in literature higher prevalence of euthyroidism was in females 68.9% (101 patients out of 147), while in males 19.0%(28 patients out of 147).[22] The result of thyroid functioning test of goiter patients where the cases of suspected iodine deficiency were 45.6%, (26 patients out of 57), Under production of TSH 28.1% (16 patients out of 57), Over production of TSH 14.0% (8 patients out of 57), Over production of thyroxine 7.0% (4 patients out of 57) and Over production of thyroxine and TSH 5.3% (3 patients out of 57). Our study also included to find out the hospital wise number of patients visiting different hospitals of district Sukkur, Sindh, Pakistan. The majority of patients were admitted in Anwar Piracha Hospital 45.6% (26 patients out of 57), Civil Hospital Sukkur 14.0 % (8 patients out of 57), Hira Medical Centre Sukkur 8.8% (5 patients out of 57), Red Cresent Hospital Sukkur 8.8% (5 patients out of 57), Sukkur Hospital Sukkur 7.0% (4 patients (7.0%), Taluka Hospital Panoaqil 5.3% (3 patients out of 57), Taluka Hospital Rohri 5.3% (3 patients out of 57), Al-khair Hospital Sukkur 3.5% (2 patients out of 57) and lowest prevalence of goiter patient was in taluka hospital Salehpat 1% (01 patient out of 57).

According to best of my knowledge previously no data is published regarding such type of work district Sukkur, Sindh, Pakistan. Therefore, we hope that this research work with be beneficent for future researchers, health care takers and will provide awareness to generation public.

CONCULSION

This Research show that in prospective study the ratio of female patients was greater than males with percentage 94.7% females and 5.3% males. In total 57 patients were suffering from goiter disease of different talukas of district Sukkur, Sindh, Pakistan. Greater number of patients with abnormal thyroid conditions were of hypothyroidism and cold nodule patients. Some patients show normal ranges of thyroid functioning tests (TFTs) but their Thyroid Scanning show that they suffered from cold nodule condition.

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3	Tahira Jabeen Ursani	Suggested topic.	
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