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EFFECTIVE MANAGEMENT OF TOXIC GOITRE STUDY OF 100 CASES

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ABSTRACT

OBJECTIVES: *The study was conducted to assess the various presentations of toxic goitre and to determine the effectiveness of various modes of management of toxic goitre at CMCH, Larkana.*
DESIGN: *This was a comparative case series study.*
SETTING: *The study was carried out at surgical unit-I, II & III of Chandka Medical College Hospital, Larkana.*
SUBJECTS: *This study was carried out during August 2002 to July 2007 on 100 patients.*
RESULTS: *The commonest presentation of thyrotoxicosis was observed to be diffuse toxic goitre (56%) followed by toxic multinodular goitre (40%) and toxic solitary nodule (04%).*
12% of cases were treated by anti-thyroid therapy while 68% of patients were operated and 20% treated with radio active iodine therapy.
CONCLUSION: *It is concluded that in thyrotoxic goiter, surgery gives quick results, is effective and does not need a prolong follow up. Surgery seems to be good alternative to antithyroid drugs which does not allow a permanent remission of hyperthroids and radioactive iodine therapy leads a long term follow up because of induced hypothyroidism which require life long thyroxine therapy.*

KEY WORDS: Toxic goitre, antithyroid therapy, surgery, radioactive iodine.

INTRODUCTION

Goiter is a major problem in Pakistan, especially in the Northern mountaineous areas, where it is endemic. In Pakistan goitre belt extends from Hazara upto Gilgit and Skardu.[1] The word goitre is used to describe enlarged thyroid gland. [2] At Chandka Medical College Hospital, Larkana, we usually receive lot of cases of goitre from Khairpur district.

In the endemic areas, it is usually considered to be a normal feature and patients avoid to visit the doctor. The people are poor and illiterate, they report very late until they develop some complications like toxicity, respiratory obstruction, stridor or malignancy. In rural areas the patients of thyrotoxicosis are treated as cases of anxiety neurosis and usually they apply tatoo marks over the goitre in a hope of regression.

Toxic goitre is a syndrome that results from secretion of excessive amount of thyroid hormones.[3] These hormones regulate energy metabolism, biosynthesis and degenerative process at cellular level including keratinocytes ad fibroblasts. [4]

Graves' disease is a systemic autoimmune syndrome with variable expression that includes goitre with hyperthyroidism, exophthalmos, pretibial myxedema and acropachy. One must distinguish between hyperthyroidism due to Graves' disease or due to single or multiple adenomas of the thyroid.

The incidence of Graves' disease in Rochester, Minnesota at the Mayo clinic and its neigshboring country from 1935 to 1967 was approximately 36 females and 8 males per 100,000 of female and male population annually.[5] The most common presentations of hyperthyroidism are Graves' disease, followed by toxic multinodular goitre, and solitary hyper functioning nodules.

The diagnosis of hyperthyroidism is generally straight forward clinically, with evidence of raised serum thyroid hormones and suppressed serum thyrotropin in most of the cases. Appropriate treatment of hyperthyroidism relies on identification of the underlying cause.

The purpose of this study is to know the different modes of presentation of toxic goitre and effectiveness of various forms of treatment.

SUBJECTS AND METHODS

Study Design: This was a comparative case series study.

Setting: Study was conducted on patients managed as OPD cases as well as admitted in Surgical Units- I, II & III of Chandka Medical College Hospital, Larkana.

Study Period: The study period was five years i.e. from August 2002 to July 2007.

Sample Size: This study was carried out on 100 patients managed as OPD cases as well as admitted in surgical units (I, II & III).

Data Collection: The diagnosis of toxic goitre was made by taking the detailed history, clinical examination and relevant investigations in collaboration with the departments of Radiology, Pathology and Larkana Institute of Nuclear Medicine and Radiotherapy (LINAR).

The clinical assessment, medical treatment, radioactive iodine therapy, preoperative preparation, operative procedure and post-operative complications were recorded in proforma especially prepared for this purpose.

Inclusion Criteria: All the patients treated as OPD cases as well as admitted at different surgical units- I, II & III of Chandka Medical College Hospital, Larkana with established diagnosis of toxic goitre.

Exclusion Criteria: Patients of simple goitre and carcinoma thyroid were excluded from this study.

RESULTS

This 5 years study starting from August 2002 to July 2007 was conducted at Surgical Units I, II & III Chandka Medical College Hospital Larkana.

The ages of patients ranged from 14-60 years (mean 33.62 years). 56 patients (56%) belonged to age group 10-30 years, 18 patients (18%) to 31-40 years, 20 patients (20%) to 41-50 years while 06 patients (6%) were above 50 years of age. (Table No. 01)

Out of 100 patients included in this study 88 were women (88%) and 12 patients were male (12%); with male to female ratio of 1:7.3 (Table No. 02)

Swelling was present in 88 patients (88%), palpitation in 84 (84%), intolerance to heat in 72 (72%), tiredness in 50 (50%), weight loss in 80 (80%), polyphagia in 48 (48%) and perspiration in 76 (76%) of patients. Tachycardia was only sign which was present in all 100 cases (100%). While tremors were present in 60 (60%) of patients, exophthalmos was seen in 28 (28%) patients and bruit was audible in 68 (68%) of patients. Clinical examination of patients revealed that thyroid gland was enlarged in 98 (98%) patients, out of whom 60 (60%) patients had diffusely enlarged goitre (Graves' disease), while 36 (36%) patients had Multinodular goitre and 4 (4%) patients had a single nodule. (Table No: 03)

All 100 patients under going study were subjected to thyroid function tests, which revealed that T3 was raised in all cases (100%) ranging from mild (30%) to severe (10%). T4 was also raised in all the cases (100%). While TSH was below normal in 88 (88%) patients and normal in 12 (12%) cases. Thyroid scan was done in all patients which showed 56 (56%) patients had diffusely enlarged thyroid, 40 (40%) patients had multiple hot areas and 4 (4%) patients had single hot nodule on their scans. (Table No. 04)

Initially in all 100 patients medical treatment was started with Carbimazole and Propranolol. Out of these, 12 (12%) were continued on medical treatment without proceeding to surgery. While among others, 68 (68%) patients were operated and 20 (20%) were treated by radio-active iodine therapy (Table No. 05)

All the patients were rendered euthyroid by giving medical treatment (carbimazole and propranolol) and all were kept on Lugol's iodine as 5 drops three times daily. Preoperatively vocal cord function was assessed by indirect laryngoscopy in all patients that was found normal.

The commonest surgical procedure done was subtotal thyroidectomy in 58 patients (85.29%), near total thyroidectomy in 06 patients (08.82%) and lobectomy with isthmusectomy in 04 patients (05.88%). (Table No: 06).

The patients were operated by classical collar/crease incision in 64 (94.11%) while 04 patients (05.88%) were operated by a newly introduced Sikandar's technique in which oblique incision was made a little anterior and parallel to lower half of corresponding sternocleidomastoid muscle. Histopathological examinations of resected thyroid of these patients revealed thyroid hyperplasia in most of the patients (47.05%), while nodular goiter in 35.29% and colloid goitre in 17.64%.

Out of 100 patients, 18 patients (1.8%) of diffuse toxic goitre and 02 patients (0.2%) with small toxic nodular goitre were treated with radio iodine therapy. 16 patients (80%) received single dose of radio iodine while 04 patients (20%) received second dose after 3 months & one year respectively. All the patients treated by radioiodine therapy developed hypothyroidism.

The post operative complications experienced were transient recurrent laryngeal nerve palsy (neuropraxia) in 04 patients (05.88%), transient hypocalcaemia in 06 patients (08.82%), wound infection in 02

Table No: 07
Frequency of Post-operative complications

Complication	No of Patients	Percentage
Haemorrhage	NIL	00%
Respiratory obstruction	NIL	00%
Recurrent laryngeal nerve palsy	04	5.88%
Hypocalcaemia	06	8.82%
Thyroid crises	NIL	00%
Seroma	04	5.88%
Haematoma	NIL	00%
Wound infection	02	2.94%
Keloid formation	02	2.94%
Hypothyroidism	04	5.88%

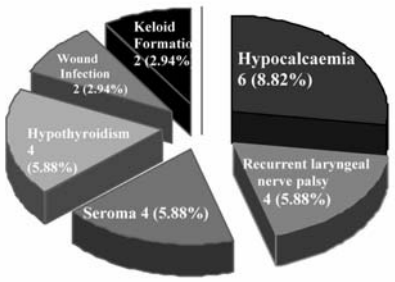


Table No: 01
AGE DISTRIBUTION

Age of Patients (years)	No: of Patients (n=100)	Percentage (%)
10 – 20 Years	18	18%
21 – 30 Years	38	38%
31 – 40 Years	18	18%
41 – 50 Years	20	20%
> - 50 Years	06	06%

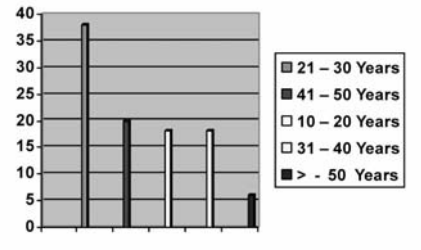


Table No: 02
SEX DISTRIBUTION

Sex	No: of Patients (n=100)	Percentage (%)
Male	12	12%
Female	88	88%

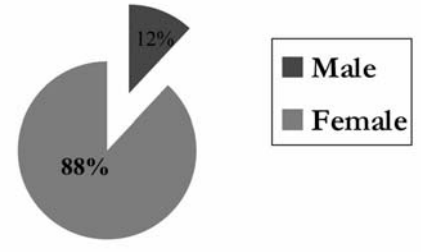


Table No: 03
Clinical types of goitres

Type	No of Patients (n=100)	Percentage (%)
Diffuse goitre	60	60%
Multinodular goitre	36	36%
Solitary Nodule	04	04%



Table No: 04
Findings on thyroid scan

Findings	No of cases (n=100)	Percentage (%)
Diffuse	56	56%
Multinodular	40	40%
Toxic nodule	04	04%



Table No: 05
Treatment Options

Treatment option	No of Patients (n=100)	Percentage (%)
Medical treatment	12	12%
Surgical treatment	68	68%
Radioiodine therapy	20	20%

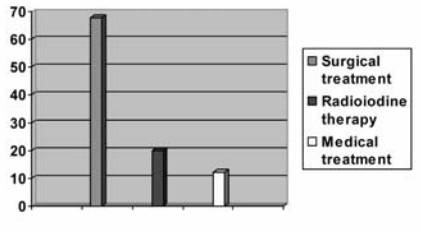
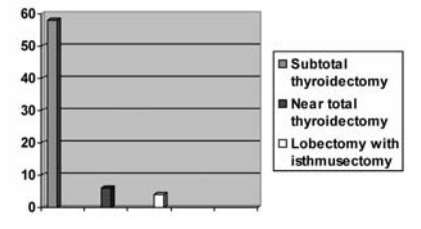


Table No: 06
Surgical Procedures Employed

Type of surgery	No of Patients (n=100)	Percentage (%)
Subtotal thyroidectomy	58	85.29%
Near total thyroidectomy	06	08.82%
Lobectomy with isthmusectomy	04	05.88%



patients (02.94%), seroma in 04 patients (05.88%), keloid formation in 02 (02.94%) and hypothyroidism in 04 (5.88%). (Table No. 07).

DISCUSSION

Thyrotoxicosis is one of the most common endocrine disorders, affecting approximately 1% of women & 0.1% of men.[3] During this study 100 cases of toxic goiter with different presentations were managed.

The age of patients ranged between 14 to 60 years (mean 33.62%). In our study sex ratio showed predominance of women. Out of 100 patients 88% were females and only 12% were males. Male to female ratio was 1:7.3. This highly correlates with other studies in where it was 1:6.7. [6]

Goiter was the main presentation in 98% of patients with diffuse goiter in 60%, multinodular in 36% and toxic nodule in 4%. that is supported by available literature in which diffuse toxic goiter is the main cause of thyrotoxicosis. [7, 8]

There is usually long history of goitre in cases of multinodular goitre which presented with toxic manifestations. This is in accordance with our study and is present in other studies as well in which goitre was present for more than 5 years in nearly all patients.

Other common presentations were palpitation, weight loss and perspiration. Tachycardia was present in all the cases (100%), with tremors and exophthalmos. These are also the main presentations in other studies. [9]

Other studies also describes that Graves' disease is usually not difficult to diagnose clinically, because the history of irritability, weight loss, heat intolerance and emotional instability is quite distinctive when joined with the physical findings of goitre, exophthalmos and other eye signs. [10]

In this study after careful history recording and clinical examination all the patients were investigated.

After diagnosis of the cases of hyperthyroidism, all the patients were initially kept on anti-thyroid drugs like Carbimazole and beta-blocking agents like propranolol. As described in the literature all cases of thyrotoxicosis should be regarded as a combined medico-surgical problem and all should receive medical treatment in the first instance, whether this is employed in the expectation that by it self it will be curative or nearly as preoperative measures to make the patients euthyroid before surgery. [11]

Patients who had small goitre with less toxicity, younger in age & who were unwilling for surgery or radio-iodine therapy were kept on medical treatment. Total no. of these patients was 12 & were followed up for 4 to 6 months there after we lost their follow up.

Other 20 patients (20%) were managed by radioiodine therapy at Larkana Institute of Nuclear Medicines and Radiotherapy (LINAR) with dose ranging from 06 to 15 mCi. Out of these 18 patients were of diffuse toxic goitre and 02 with small nodular goitre. Hypothyroidism was observed in all patients (100%), which was treated with thyroxine. However in the study of Akhtar MS et al indicates hypothyroidism in 18.47%.[12] Other workers also suggest radioiodine treatment as an effective modality for definitive treatment of hyperthyroidism with long term cure approaching to about 80%.[13]

In our study 68% of patients underwent surgical procedures.

The patients with toxic nodule, toxic multinodular goitre, large in size and patients below 45 years of age with incomplete family were subjected to surgery. Surgery was also performed in those cases of diffuse toxic goitre, where goitre was large in size & there was failure of medical treatment. Preoperatively all patients were administered carbimazole, propranolol and Lugol's iodine as is described in the literature.[14]

Commonest procedure performed was subtotal thyroidectomy (85.29%). This is also supported by other studies.[15] Though the current trend is to perform near-total or total thyroidectomy.[16, 17] In our study near-total thyroidectomy was done in 08.82% of patients. In 04 cases (05.88%) of solitary hyper functioning nodules, lobectomy along with isthmusectomy was done by Sikandar's technique which is most appropriate for these types of cases. [18]

Major complications like reactionary haemorrhage, respiratory obstruction, permanent recurrent nerve paralysis or thyroid storm were not observed in any single case. In our study 22 patients (32.35%) developed some sort of minor complications. The most common complication observed was the transient hypocalcaemia (8.82%). This is equal to study published by Chir Ital.[19] & is slightly higher than the published study of Khalid K et al in which it was 2.38%.[20] Hoarsness due to transient recurrent nerve palsy and seroma was observed in only 5.88% of cases. This is nearly equal to data published in other studies. [21] But it is slightly higher than the data published by Arif M in which it was 2.3% and by Malik AZ et al in which it was 1.5%. [22, 23] Cases of hoarseness after thyroidectomy could be mild recurrent or superior laryngeal or combined nerve paralysis. [24] In our study hypothyroidism was observed in 04 cases (5.88%) this is slightly higher than the study of Vickers P et al in which he reported hypothyroidism in 03 patients (2.30%) out of 130 throidectomies performed for hyperthyroidism. [25]

CONCLUSION

It is concluded that in thyrotoxic goitre, surgery gives quick results, is effective and does not need a prolong follow up. Surgery seems to be good alternative to antithyroid drugs which does not allow a permanent remission of hyperthroids and radioactive iodine therapy leads a long term follow up because of induced hypothyroidism which require life long thyroxine therapy.

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