

Study on Incidence and Various Modes of Presentation of Thyroid Orbitopathy

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Abstract

Introduction: Thyroid associated ophthalmopathy is an autoimmune disorder affecting the orbital and periorbital tissues. Hyperthyroidism is commonly associated with thyroid associated ophthalmopathy, however in 5% to 10% of cases it is euthyroid. Genetic, environmental and endogenous factors play a role in the initiation of the thyroid ophthalmopathy. **Materials and Methods:** This is a prospective study conducted on total 40 patients according to inclusion criteria. All patients underwent a comprehensive ophthalmological examination and radiological examination. **Results:** In the present study, 5th decade was the most common age group observed with thyroid orbitopathy in 12 cases (30%). Female preponderance was seen with females twice more common than males. Hyper thyroidism (67.5%) is most common thyroid status observed. Uniocular presentation (75%) with right eye involved more frequently 40% than left eye. Sandy and Grittiness (60%) was the most common symptom, Proptosis (90%) was the most common sign and Lid retraction (85%) was the second most common sign observed. Inferior rectus most commonly involved muscle (62.5%) and least involved muscle was lateral recuts (22.5%). Corneal involvement with tear film abnormalities 10%, optic nerve compression 5% and ptosis 5% were observed less severe in our study. **Conclusion:** In present study we found that 5th decade 12 (30%) with female preponderance and most of the cases are with proptosis.

Keywords: Graves Ophthalmopathy; TAO; Hyperthyroid; Proptosis; Uniocular.

Introduction

Thyroid-associated orbitopathy (TAO), frequently termed Graves ophthalmopathy, is part of an autoimmune process that can affect the orbital and periorbital tissue, the thyroid gland, and, rarely, the pretibial skin or digits (thyroid acropachy) [1,2,3]. Although the use of the term *thyroid ophthalmopathy* is pervasive, the disease process is actually an orbitopathy in which the orbital and periocular soft tissues are primarily affected with secondary effects on the eye.

Thyroid-associated orbitopathy may precede, coincide, or follow the systemic complications of dysthyroidism. The ocular manifestations of thyroid-associated orbitopathy include eyelid retraction, proptosis, chemosis, periorbital edema, and altered ocular motility with significant functional, social,

and cosmetic consequences. Of those patients affected, 20% indicate the ocular morbidity of this condition is more troublesome than the systemic complications of dysthyroidism.

The annual incidence rate of thyroid-associated orbitopathy has been estimated at 16 cases per 100,000 women and 2.9 cases per 100,000 men in one rural Minnesota community [4]. There appears to be a female preponderance in which women are affected 2.5-6 times more frequently than men; however, severe cases occur more often in men than in women. In addition, most patients are aged 30-50

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Received on 28.06.2017, Accepted on 11.07.2017

years, with severe cases appearing to be more frequent in those older than 50 years.

Although most cases of thyroid-associated orbitopathy do not result in visual loss, this condition can cause vision-threatening exposure keratopathy, troublesome diplopia, and compressive optic neuropathy. Therefore, although the prognosis is generally favorable for patients with this condition, and most patients do not require surgical intervention [5,6], all clinicians should be able to recognize thyroid-associated orbitopathy.

The objective of the present study is to study the orbital manifestations of Thyroid orbitopathy at Sarojini Devi Eye Hospital, Hyderabad conducted from October 2009 to November 2011.

Materials and Methods

This is a prospective study on incidence and various modes of presentation of Thyroid Related Ophthalmopathy. In the present study, a total number of 40 cases of Thyroid Ophthalmopathy examined at Sarojini Devi Eye Hospital, Hyderabad from November 2009 to November 2011.

Inclusion Criteria

All ages and both sexes were included. All cases of Proptosis with signs and symptoms investigations suggestive of thyroid related ophthalmopathy were included.

Exclusion Criteria

All cases with similar presentation not proved to be thyroid orbitopathy were excluded.

All the patients were subjected to a thorough history taking and clinical examination with special emphasis to thyroid dysfunction with or without treatment. Detailed ocular evaluation comprising of examination for lid signs, ocular motility, LPS functions, visual acuity, colour vision, Slit lamp evaluation of anterior segment, Hertel's exophthalmometry, IOP, and fundus evaluation were done.

Apart from routine haematological examinations, the patients were subjected to radiological investigations like CT scan as per the clinical requirement to assess the lesion as well as monitor its progression or regression was done.

Serological investigations included Thyroid profile. Once the case is confirmed to be of thyroid

orbitopathy, depending on the stage of clinical presentation, the patients were reassured and observed or medical with or without surgical treatment initiated. All the patients were referred to an endocrinologist for management of thyroid dysfunction.

The data analyzed for the following observations regarding Thyroid Ophthalmopathy: Age distribution, Sex distribution, Thyroid status, Laterality, Mode of presentation, Symptoms, Signs and Extra ocular muscle involvement. All these cases are included regardless of age and sex.

Results

The 1 table showing age distribution with, maximum number of cases in our study seen from 3rd, 4th, and 5th decades, with most number of cases observed in 5th decade 12 (30%), least number of cases 2(5%) observed in extreme ages, 1st and 7th decades. Mean age 39.5 yrs was noted. In sex distribution with a female preponderance 26(65%) and 14 male cases with (35%). Based upon the Thyroid Status of the patients they were sub divided in to three groups Hyperthyroid, Euthyroid, Hypothyroid. In our series 27 cases out of 40 patients were Hyperthyroid (67.5%) 10 cases euthyroid (25%), Hypothyroids seen only in 3 cases (7.5%).

The thyroid status was correlated with the sex of the patients. In both the sexes, the hyperthyroid status was most common followed by euthyroid and hypothyroid. No male was reported to be hypothyroid. The laterality of orbitopathy was analyzed in above table. The most common presentation was unilateral (75%) in which the right eye (40%) was found to be frequently involved compared to the left eye (35%).

Table 2 shows, common presentation of the complaints by the patients in our study was proptosis seen in 36 cases (90%), Lidretraction in 34 cases (85%), Mild restrictions of extraocular muscles in 17 cases (42.5%), Diplopia in 10 cases (25%) and dry eyes in 4 cases (10%).

Commonest symptom encountered in the present study was sandy and gritty sensation of eyes 60% followed by excessive tearing 45%, Diplopia 25%, Photophobia 7.5%, pain on upward attempted gaze 5% respectively.

None of the patients reported loss of vision. Most common sign in our study was Exophthalmos 36 (90%), Lid retraction 34 (85%) second most common sign observed.

Table 1: Age distribution

Age Distribution in Years	No of Cases	Percentage
1 - 10	0	0
11-20	2	5%
21-30	10	25%
31-40	9	22.5%
41-50	12	30%
51-60	5	12.5%
61-70	2	5%
Sex distribution		
Males	14	35%
Females	26	65%
Total	40	100%
Category		
Hyperthyroids	27	67.5%
Euthyroids	10	25%
Hypothyroids	03	7.5%
Laterality		
Unilateral	30	75%
Right eye	16	40%
Left eye	14	35%
Bilateral	10	25%

Table 2: Mode of Presentation

Modes of Presentation	No of Cases	Percentage
Lid retraction	34	85%
Proptosis	36	90%
Periorbital swelling	24	60%
Congestion	18	45%
Chemosis	24	60%
Muscle restrictions	17	42.5%
Diplopia	10	25%
Dry eyes	04	10%
Ocular symptoms		
Excessive tearing	18	45%
Sandy and Gritty sensation	24	60%
Photophobia	3	7.5%
Pain on upward attempted gaze	2	5%
Diplopia	10	25%
Loss of vision	0	0
Ocular signs		
Dalrymple sign	34	85%
Von Grafe's sign	18	45%
Enroth's sign	30	72.5%
Gifford's sign	10	25%
Stellwag's sign	06	15%
Joffroy's sign	14	35%
Convergence weakness (Moebius)	14	35%
Exophthalmos	36	90%
Conjunctival injection	18	45%
Corneal involvement	04	10%
Colour vision abnormalities	02	5%
Increase in IOP in up gaze	13	32.5%

Table 3: Extra ocular Muscle Involvement

Muscle Involved	Number		Percentage
	Alone	In combination	
Inferior Rectus	9	16	62.5%
Medial Rectus	5	17	55%
Superior Rectus LPSCOMPLEX	5	8	32.5%
Lateral Rectus	0	9	22.5%

Above table shows that inferior rectus muscle was the commonest muscle involved with 62.5%, followed by Medial Rectus 55%, Superior Rectus – LPS complex 32.5%, Lateral Rectus involved least with 22.5% in descending order. The incidence of involvement of various recti muscles was analyzed based upon computerized tomographic scan (CT scan) findings.

Discussion

The present study conducted in department of oculoplastics at Sarojini Devi Eye Hospital, Hyderabad for a period of 24 months, from November 2009 to November 2011.

A detailed ocular examination was done in 40 cases of Thyroid related Ophthalmopathy.

During our study a maximum number of cases in different age groups observed in 3rd, 4th and 5th decades, with highest number of cases seen in 5th decade 12 (30%) and lowest number of cases 2 (5%) noted in extreme age groups 1st and 7th decade, with a mean age 39.5 yrs. A study done by Cemola J et al [7] observed a mean age 46.5 + 11.4 years.

In our study females are 26 (65%) and males 14 (35%), with female ratio twice more than males. Female Preponderance observed. In a study done by Khurana AK et al [8] found a female preponderance with female to male ration 1.5:1.

In our study 27 cases (67%) are hyper thyroids followed by euthyroids 10 cases (25%) and 3 cases hypothyroids with less than 10%. In our study hyperthyroidism observed high in both sexes, among them females more commonly associated with hyperthyroidism (40%) than males (27.5%). No male reported hypothyroid in our study. Morcocil, Bartalene et al [9] found hyperthyroidism in 91.4% of females, euthyroids in 8.6% in total of 202 patients.

In the present study thyroid ophthalmopathy most commonly presented with uniocular involvement 30 cases (75%) and bilateral involvement seen in 10 cases (25%). In a study done by Jack Root man [10] quoted most common lid malposition was lid retraction particularly upper lid retraction, in contrary in our study we have noted lid retraction as 2nd most common sign in 34 cases with 85%.

In our study exophthalmos observed as most common sign 36 cases (90%) in contrary to the study done CemeloJ et al [7] in 126 cases found exophthalmos (77%) 2nd most common sign.

In our study chemosis and periorbital swelling seen in 24 cases (60%). A study done by 21 Jakuanskine and Imbriasiene in 27 cases observed similar occurrence 60%.

Differential involvement of extraocular muscles were correlated with CT images and found inferior rectus most commonly involved muscles 62.5% followed by medial rectus 55%, superioectus-LPS complex 32.5% and lateral rectus involved least with 22.5% in decending order. In one study done khurana et al [8] in 30 cases observed medial rectus most commonly involved followed inferior rectus superior rectus-LPS complex and lateral rectus least involved. In controlled radiologic study done by Jack Rootman [10] superior rectus-LPS complex most commonly involved.

In the present study, differential increase in intraocular pressure observed in 5 males (12.5%) and 9 females (22.5%). Cemelo J et al observed increase in intraocular pressure among males with 70% as compared to females 77%.

In addition our study analyzed the data regarding extraocular muscles restrictions observed in 17 cases (42.5%), diplopia seen in 10 cases (25%), corneal involvement with dry eyes and exposure keratopathy observed in 4 cases (10%), compressive optic neuropathy with decrease in colour vision noted in 2 cases (5%), strabismus 3 cases (7.5%), ptosis observed in 2 cases (6.6%).

Conclusions

After analyzing our data we reached following conclusions.

- 5th decade most common age group observed with thyroid orbitopathy 12 cases (30%), mean age 39.5.
- Female preponderance seen with females twice more common than males.
- Hyper thyroidism 67.5% is most common thyroid status.
- Uniocular presentation 75% with right eye involved more frequently 40%
- Sandy and Grittiness most common symptom 60%.
- Proptosis most common sign 90%.
- Lid retraction second most common sign 85%.
- Inferior rectus most commonly involved muscle 62.5%, least involved muscle lateral recuts 22.5%.

- Corneal involvement with tear film abnormalities 10%, optic nerve compression 5% and ptosis 5% were observed less severe in our study.

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