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Original Research Article

A study on the clinical profile of patients with thyroid-related orbitopathy presenting to a tertiary eye care institute

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ABSTRACT

Background: Thyroid-associated orbitopathy is an autoimmune disorder that is the most frequent extrathyroidal involvement of Graves' disease but sometimes occurs in euthyroid or hypothyroid patients. Patients with Thyroid associated disease present with chemosis, superior limbic keratoconjunctivitis, proptosis, lid retraction and oedema, restricted extraocular muscle, and dysthyroid optic neuropathy.
Materials and Methods: This study was an observational cross-sectional study which included all the patients with all age groups who attended the Outpatient Department of a Tertiary Care Hospital, Ajmer, with signs and symptoms of thyroid-associated orbitopathy or diagnosed with thyroid-associated orbitopathy with no history of multiple endocrine disorder.
Result: 95 subjects satisfying the inclusion and exclusion criteria were enrolled in the study. The mean age of study participants was 43.93± 12.25 years. Age ranges from 21 years to 80 years. 59 (62.1%) were female. Among all patients 69 (72.6%) were hyperthyroid, 19 (20.0%) were euthyroid and 7 (7.4%) were euthyroid. 5 (5.2%) presented with dysthyroid optic neuropathy. 40(42.10%) cases were of active thyroid eye disease (TED) and the remaining 55 (57.8%) were inactive cases. Out of all active presenters, 30% were having Clinical Active Scoring (CAS) ≥4.
Conclusion: Middle age group and female sex were the common clinical profile of the patients of TED. When active and Inactive TED groups were compared, findings such as Average CAS, dysthyroid optic neuropathy, average Hertel's value, and presenting signs were significantly higher in the active group.

1. Introduction

Thyroid-associated ophthalmopathy is an autoimmune disorder that is the most frequent extrathyroidal involvement of Graves' disease but sometimes occurs in euthyroid or hypothyroid patients.[1] Patient's quality of life could be affected even by mild disease.[2] TED is more common in females. Males and advancing age are at a higher risk of severe disease.[3] TED is estimated to affect between 155 and 250 people per 100,000 of the overall population.[4] The prevalence of TED among patients with thyroid dysfunction ranges from 34.7% to 51.7%.[5] For predisposition to Graves ophthalmopathy, environmental (Smoking, selenium deficiency, vitamin D deficiency) and genetic factors (Family history of thyroid disease) are also important.[6,7] To assess the clinical manifestations of TED there are many classification systems like Werner's NO SPECS classification (No physical signs or symptoms, only signs, Soft tissue involvement, Proptosis, Extraocular muscle signs, Corneal involvement, and Sight loss).[8] Clinical Activity Score (CAS) is a classification system for TED to determine the treatment according to the severity and progression of the disease.[9,10] Patients with Thyroid-associated disease present with chemosis, superior limbic keratoconjunctivitis, proptosis, lid retraction and

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oedema, restricted extraocular muscle, and dysthyroid optic neuropathy.[11]

2. Aims and Objectives

To analyse the demographic profile and clinical manifestations of TED in patients presenting to a tertiary care hospital in Ajmer, Rajasthan.

3. Materials and Methods

This study was an observational cross-sectional which included all 95 patients from all age groups who attended the Outpatient Department of a Tertiary Care Hospital, Ajmer, with signs and symptoms of thyroid-associated orbitopathy or diagnosed with thyroid-associated orbitopathy with no history of multiple endocrine disorder, after taking informed consent. Complete ocular examinations including visual acuity, colour vision, assessment for different lid signs, anterior segment examination by slit lamp, intraocular pressure measurement, fundus examination, extraocular movement, and exophthalmometry by Herterl's exophthalmometer were performed. General systemic examination and blood investigations like CBC, ESR, T3, T4, and TSH were also done. Based on the ocular examination Clinical Activity Score (CAS) was calculated to determine the treatment and progression of the disease.

4. Results

The mean age of study participants was 43.93± 12.25 years. Age ranges from 21 years to 80 years. Maximum number of cases was in the age group 41 to 50 years (36.8%). The majority of participants were Female (62.1%). Bilateral proptosis was present in 84.4% of cases. Among all patients 69 (72.6%) were hyperthyroid, 19 (20.0%) were euthyroid and 7 (7.4%) were euthyroid. 5 (5.2%) presented with dysthyroid optic neuropathy. 42.1% active TED (Onset< 12 months) patients and 57.8% inactive TED (Onset> 12 months) patients with no correlation with age at presentation. In active TED findings such as Average CAS (2.30), dysthyroid optic neuropathy 5(100%), average Hertel's value (21.97±2.39), and presenting signs like proptosis lower lid retraction were significantly higher as compared to inactive TED (Table 1). Two-thirds (70%) of active cases were observed to be silent presenters (Onset >12 months and CAS≤3) and 30% to be clinically active group (Onset< 12 months and CAS≥4); having a statistically significant correlation with age. Average Hertel's exophthalmometry value, dysthyroid optic neuropathy was significantly higher in the clinically active Group compared to the silent presenters (Table 2).

Figure 1: Showing Kocher's sign (staring look and frightening appearance of eyes) with Dalrymple's sign (LID Retraction) and chemosis

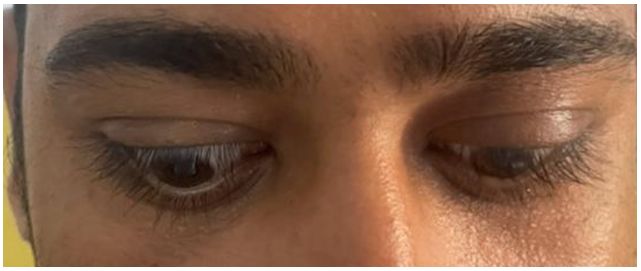

Figure 2: Showing von Graefe's sign (upper lid retraction on down gaze)

5. Discussion

This study was an observational, cross-sectional study conducted in the Department of Ophthalmology, J.L.N. Medical College, Ajmer - a tertiary care centre with well-equipped facilities. The mean age of study participants in the current study was 43.93± 12.25 years. Since the majority of hyperthyroid patients are found in the age group 22-40 years, thyroid eye disease manifests late in these patients. Most of the cases were in the age group 41 to 50 years (36.8%) in the present study which is following the previous studies. Female to male ratio was 1.64:1, which shows female preponderance in this disease.[12,13] Ophthalmic findings are usually bilateral (84.4%), but may also be unilateral or asymmetric. Most of the patients have symptoms including dryness and stinging, photophobia, epiphora, diplopia, and a feeling of pressure behind the eyes. Watering and gritty sensation are the commonest presenting symptoms among the Indian population.[12] Subclinical involvement is present in approximately 70% of patients with Graves' hyperthyroidism. Expansion of the extraocular muscles may be apparent on magnetic resonance imaging (MRI) and computed tomography (CT). In approximately 3-5% of patients, the disease follows a severe course with severe pain, inflammation, sight-threatening corneal ulceration, and compressive optic neuropathy.[14] Hyperthyroidism was found in 72.6% of cases. This implies

Table 1: Comparison of demographic and clinical profile of thyroid eye disease (Ted) patients when divided between active TED (N = 40) and inactive TED (N = 55)

	Active TED	**Inactive TED**	
Definition	Onset< 12 months	Onset >12 months	**P Value**
Number	40 (42.10%)	55(57.8%)	
Average age at presentation	45.64	43.67	>0.05 (NS)
Average CAS	2.30	0.5	<0.001 (S)
Dysthyroid Optic Neuropathy	5 (100%)	0 (0%)	0.026 (S)
Average Hertel Value	21.97± 2.39	19.75± 1.28	<0.001 (S)
Proptosis	33 (73.3%)	12(26.6%)	<0.001 (S)
Lower lid retraction	16 (66.6%)	8 (33.3%)	0.010 (S)

Table 2: Comparison of demographic and clinical profile of clinically active thyroid eye disease (TED) patients when divided between 2 groups: Clinically active group (N = 12) and silent presenters (N = 28)

Definition	**Clinically active group (CAS≥4) Onset< 12 months and CAS≥4**	**Silent Presenter (CAS≤3) Onset >12 months and CAS≤3**	**P Value**
Number	12 (30%)	28 (70%)	
Average age at presentation	50.4	42.46	<0.001 (S)
Average CAS	4.2	1.57	<0.001 (S)
Dysthyroid Optic Neuropathy	4 (80%)	1 (20%)	0.009 (S)
Average Hertel Value	23.83± 2.75	21.02± 3.01	0.009 (S)

that most of the cases were hyperthyroid in this study (nearly two-thirds). Most Hypothyroid patients had mild disease while most hyperthyroid patients had moderate to severe disease. In hypothyroid patients, milder symptoms like dry eye are common presenting symptoms.[15] These symptoms can be missed if TED is not suspected in these patients. Earlier systemic involvement is more common in hypothyroid patients, unlike hyperthyroid patients where ocular involvement is more common earlier. 5(5.2%) cases had Dysthyroid optic neuropathy which is a serious sight-threatening complication commonly present in hyperthyroid patients. 42.1% active TED (Onset< 12 months) patients and 57.8% inactive TED (Onset> 12 months) patients with no correlation with age at presentation are seen. In active TED findings such as Average CAS (2.30), dysthyroid optic neuropathy 5(100%), average Hertel's value (21.97±2.39), and presenting signs like proptosis lower lid retraction were significantly higher as compared to inactive TED. Treatment of TED patients is determined by CAS. If CAS is ≥3 steroids are prescribed in active TED.

6. Conclusion

Middle age group and female sex were the common clinical profile of the patients of TED. TED was the most frequently associated with Graves' disease. Dry eye symptoms were commonly presenting symptoms. Hyperthyroid and active TED were risk factors for sight-threatening disease. 5 out of 95 cases were presented as Dysthyroid Optic Neuropathy which is the most sight-threatening complication of TED. Early diagnosis, appropriate treatment and close follow-up are necessary as TED may lead to sight-threatening conditions.

7. Source of Funding

None.

8. Conflict of Interest

None.

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