



EXAMINING THE PREVALENCE OF THYROID ASSOCIATED ORBITOPATHY: CLINICAL INSIGHTS

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KEYWORDS :

INTRODUCTION:-

Thyroid associated orbitopathy, also known as thyroid eye disease (TED), is an autoimmune condition and the leading cause of both unilateral and bilateral proptosis in adults worldwide. Activated T cells infiltrate the orbital contents and stimulate orbital fibroblasts, enlarging extraocular muscles, expanding orbital fat, and fibrosis. Compression of optic nerve at the orbital apex by the enlargement of extra ocular muscles occurs in <5% of patients with typical thyroid eye disease resulting in slowly progressive fulminant visual loss. Because of its potential reversibility with prompt medical, surgical, or in combination interventions, accurate and prompt diagnosis and appropriate management are important.

AIM:-

To assess the prevalence of ocular manifestations in patients with systemic thyroid disease and to study various clinical presentations of thyroid disease in the eye.

MATERIAL AND METHODS :-

This is a prospective and observational study conducted in the OPHTHALMOLOGY department of MIMS, Nellimarla, from October 2023 to September 2024, following approval from the institute's ethical committee. A total of 90 subjects with Thyroid disease are examined for a period of one year to assess the prevalence of ocular manifestations and any clinical presentations of thyroid disease in the eye.

A comprehensive ocular examination is performed for all patients, including testing visual acuity, assessing proptosis using Hertel exophthalmometry, and evaluating eyelid retraction and other motility tissues. Imaging techniques like CT and MRI are used to visualize the orbital structures in detail and assess extraocular muscle involvement.

Sample Size:- 90 subjects

Inclusion Criteria:- Patients diagnosed with Thyroid disease older than 18 years

Exclusion Criteria:

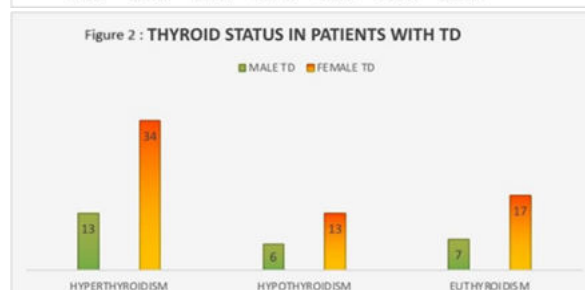
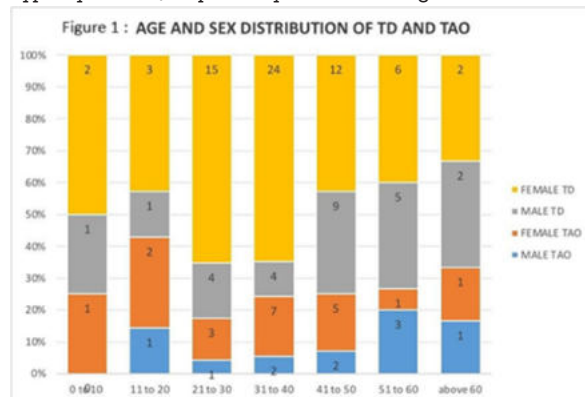
1. Individuals with prior ocular surgery that may affect ocular anatomy or function.
2. Patients with non-thyroid related autoimmune disorders and uncontrolled systemic diseases.

RESULTS:-

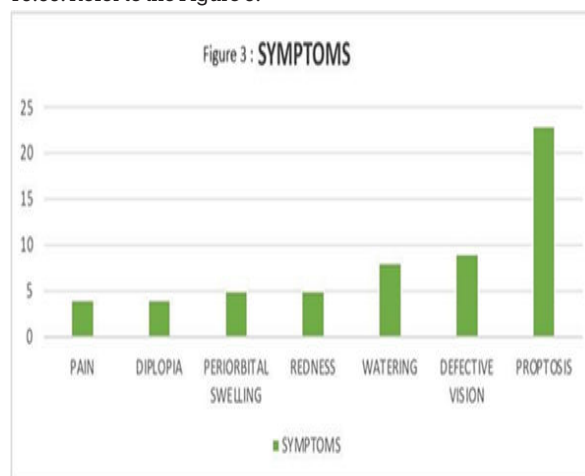
The most common age group at presentation for females with Thyroid Associated Orbitopathy (TAO) is 31-40 years, followed by 41-50 years. For males with TAO, the most common age group is 51-60 years, followed by 41-50 years. The statistical analysis shows that the female group is significantly more affected by both Thyroid Disease ($P=0.00107$) and TAO ($P=0.00203$). Refer to the Figure 1.

The most common thyroid status observed in patients with both thyroid disease (47 out of 90 cases) and Thyroid

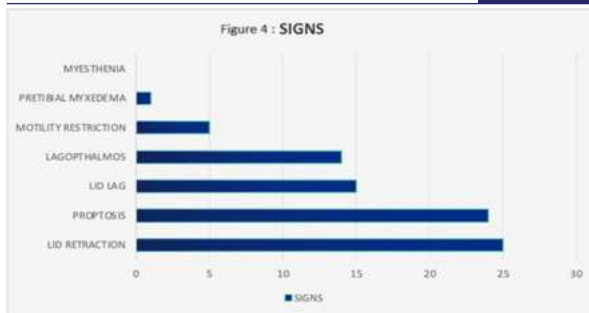
Associated Orbitopathy (17 out of 30 cases) is hyperthyroidism, followed by euthyroidism and hypothyroidism, respectively. Refer to the Figure 2.



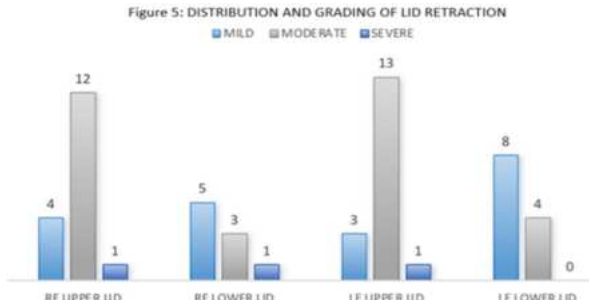
Proptosis is the most common manifestation occurring in 76.66% of Thyroid eye disease patients followed by defective vision in 30%, watering in 26.66%, periorbital swelling in 16.66%, redness in 16.66%, diplopia in 13.33%, and pain in 13.33. Refer to the Figure 3.



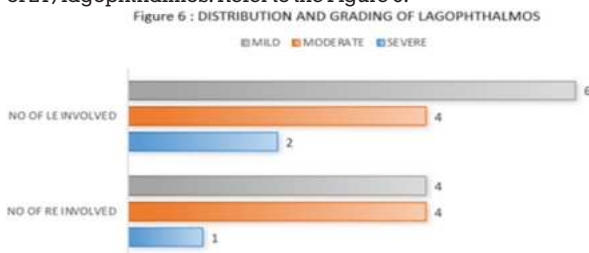
Lid retraction is the most common sign occurring in 83.33% of Thyroid eye disease patients followed by proptosis in 80%, lid lag in 50%, lagophthalmos in 46.66%, motility restriction in 16.66%, pretibial myxedema in 3.33%. Refer to the Figure 4.



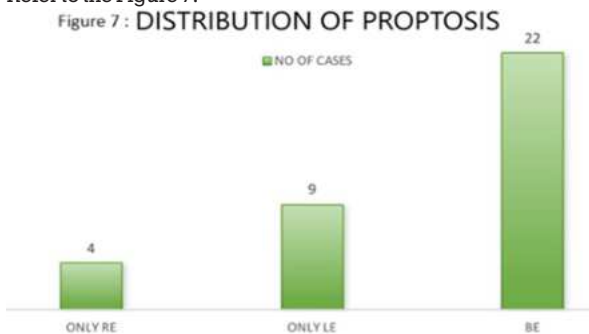
According to present study mild and moderate lid retraction are more common than severe lid retraction. Refer to Figure 5.



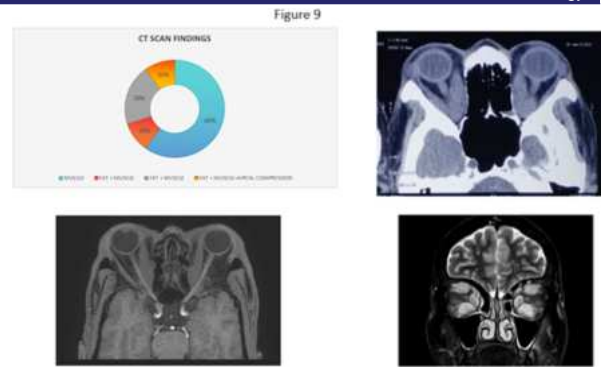
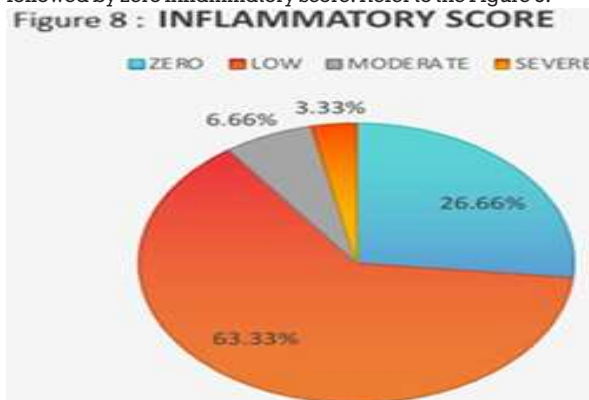
According to the present study mild (10 out of 21) to moderate (8 out of 21) lagophthalmos is more common than severe (3 out of 21) lagophthalmos. Refer to the Figure 6.



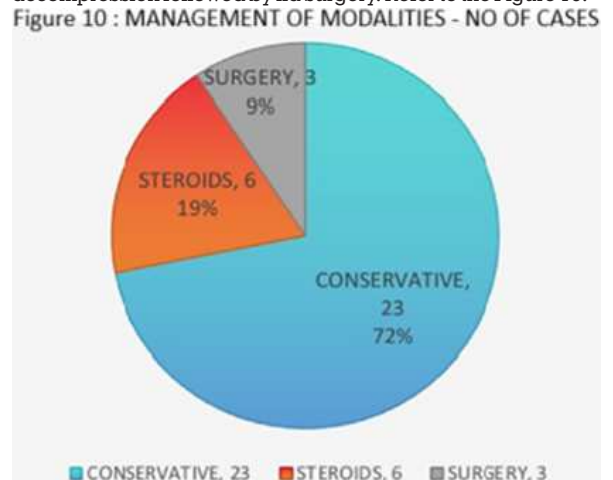
According to the present study proptosis of both eye involvement is more common than unilateral involvement. Refer to the Figure 7.



Most of the cases presented with low inflammatory score followed by zero inflammatory score. Refer to the Figure 8.



Most common management required in the present study is medical than surgical. Among the surgical management options most of the patients required orbital wall decompression followed by lid surgery. Refer to the Figure 10.



DISCUSSION:-

Tellez et al. found that the prevalence of thyroid-associated orbitopathy (TAO) in individuals with hyperthyroidism was notably higher among Europeans (42%) compared to Asians (7.7%). In our study, out of 90 patients diagnosed with thyroid Disease (TD) who underwent evaluation, 30 patients exhibited signs of thyroid-associated orbitopathy (TAO), indicating a prevalence of 33.33%. This suggests that the prevalence of TAO among Indians in this study was greater compared to the prevalence observed among Asians in the study conducted by Tellez et al.

Bartley GB observed that white American patients with thyroid-associated orbitopathy (TAO) had two peak incidence rates: in women, aged 40-44 years and 60-64 years, and in men, aged 45-49 years and 65-69 years. In contrast, our study found peak incidence rates for TAO in Indian patients in the age groups 30-34 years and 40-44 years for women, and 45-49 years and 40-45 years for men. This suggests that TAO affects younger individuals among Indians compared to white Americans. In our study, we found that lid retraction is most frequently affected the upper lid, accounting for 61.81% of cases (34 upper lids), while the lower lid was involved in 38.18% of cases (21 lower lids). Similarly Dutton et al. reported a higher prevalence of lid retraction in the upper lid at 76.04% (146 upper lids) and in the lower lid at 23.96% (46 lower lids).

In our study, the second most prevalent indicator was proptosis, affecting 80% of the cases, with 24 patients displaying proptosis, either bilaterally or unilaterally, and an average exophthalmometry measurement of 19.63 mm. Lim N C reported proptosis as the second most common sign among TAO patients in Singapore, accounting for 61.0% of cases, with a mean exophthalmometry reading of 18.8 mm (SD+3.32, range 10.0-28.0)46. These findings indicate a higher

frequency of proptosis in Indian patients, along with a greater mean exophthalmometry reading.

In our Study, 16.6% of participants exhibited motility restrictions, with 13.3% experiencing this limitation in both eyes and 3.3% in the left eye exclusively. Conversely, Dutton et al. observed motility restrictions in 25.86% of their study cohort, with 18.10% affected in both eyes, 3.45% solely in the left eye, and 4.31% solely in the right eye. In our study, compressive optic neuropathy was observed in 10% of patients, nearly twice the prevalence reported in white Americans (5.8%) by Dutton.

In our study, steroid treatment was utilized in 20% of cases, followed by surgical management in 10%. Steroid treatment was the predominant modality in Chinese (92.7%), Europeans (90.5%), and Latin-Americans (88.2%), followed by orbital irradiation in Chinese (16.1%), Europeans (23.8%), and Latin-Americans (17%), and then surgical treatment in Chinese (7.3%), Europeans (20.9%), and Latin-Americans (7%)⁶¹. Treatment options for TAO were notably similar among Chinese, Latin-Americans, Europeans, and Indians, although surgical treatment was more frequently indicated in Indians due to a higher incidence of CON and lagophthalmos.

CONCLUSION:-

33.33% of patients diagnosed with thyroid disease (TD) were found to have Thyroid Associated Orbitopathy (TAO). TAO is more prevalent in individuals with hyperthyroidism (56.6%), affecting both males and females, although this association is notably less frequent compared to Caucasians. TAO tends to be more common in females and occurs at a younger age in India. Proptosis is the predominant presenting symptom, while lid retraction is the most commonly observed sign. The occurrence of compressive optic neuropathy is more frequent in Indian patients compared to Caucasians. The majority of TAO cases are managed conservatively. It is recommended that all patients with TAO urged to cease smoking, and promptly treated to restore and maintain euthyroidism.

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