FP-171129- A CLINICAL STUDY ON THE OCULAR MANIFESTATIONS IN THYROID EYE DISEASE

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INTRODUCTION

- Thyroid eye disease (TED) also known as Graves orbitopathy, thyrotoxic exophthalmos, thyroid orbitopathy, thyroid associated orbitopathy.
- Orbital rather than an ophthalmic process*.
- Most common cause of unilateral or bilateral proptosis in adults.
- Ocular discomfort, visual disability and facial disfigurement are the manifestations due to immune mediated inflammatory events, and may lead to irreversible tissue alterations.

- ***Graves RJ. Clinical lectures. Lond Med Surg J 1835;7:516-7**.

MATERIALS AND METHODS

- **STUDY DESIGN** : **CROSS-SECTIONAL OBSERVATIONAL STUDY .**
- **STUDY SETTING :** Department of ophthalmology, Rangaraya medical college, Kakinada
- **STUDY SUBJECTS** : A total of 40 patients who were all clinically diagnosed cases of TED attending our OPD.
- **STUDY DURATION** : December 2019 to September 2021.
- **STUDY TOOLS** : Snellen’s visual acuity charts
- Hertel’s ex-ophthalmometer,
- USG b-scan,
- Applanation tonometry,

- Slit lamp biomicroscope
- Fundus examination with 90D, direct and indirect ophthalmoscopy.
- Relevant blood and radiological investigations.

➢**INCLUSION CRITERIA** :

- All clinically diagnosed cases of thyroid eye disease.

➢**EXCLUSION CRITERIA** :

- Not willing to give written consent to participate in the study.
- Patients with other ocular and systemic pathologies.

RESULTS

- TABLE 1 - AGE OF PRESENTATION :

MEAN AGE OF PRESENTATION	PERCENTAGE
11-20	4%
21-30	25%
31-40	17%
41-50	54%

- According to the results, the mean age of presentation was in fourth decade, followed by clustering of cases in the third decade.

- TABLE 2 - SEX INCIDENCE :

SEX	NUMBER OF CASES	PERCENTAGE
FEMALES	30	75%
MALES	10	25%

- TABLE 3 – TOBACCO USERS VS NON-USERS :

USAGE STATUS	PERCENTAGE
USERS	20%
NON-USERS	80%

- TABLE 4 – THYROID STATUS :

THYROID STATUS	NUMBER OF CASES	PERCENTAGE
HYPERTHYROIDISM	34	85%
HYPOTHYROIDISM	6	15%
EUTHYROID	0	0%

- TABLE 5 – LATERALITY :

LATERALITY	NUMBER OF CASES	PERCENTAGE
BILATERAL	29	72.5%
UNILATERAL	11	27.5%

- TABLE 6 – SYMPTOMS :

SYMPTOMS	PERCENTAGE
FOREIGN BODY SENSATION / DRYNESS	60%
SWELLING OF EYE LIDS	17.5%
REDNESS	10%
PAIN	7.5%
DIPLOPIA	5%

- TABLE 7 – MANIFESTATIONS :

SIGNS	PERCENTAGE
EYELID RETRACTION	65%
PROPTOSIS	30%
RESTRICTIVE MYOPATHY	5%
EXPOSURE KERATITIS	0%
OPTIC NEUROPATHY	0%

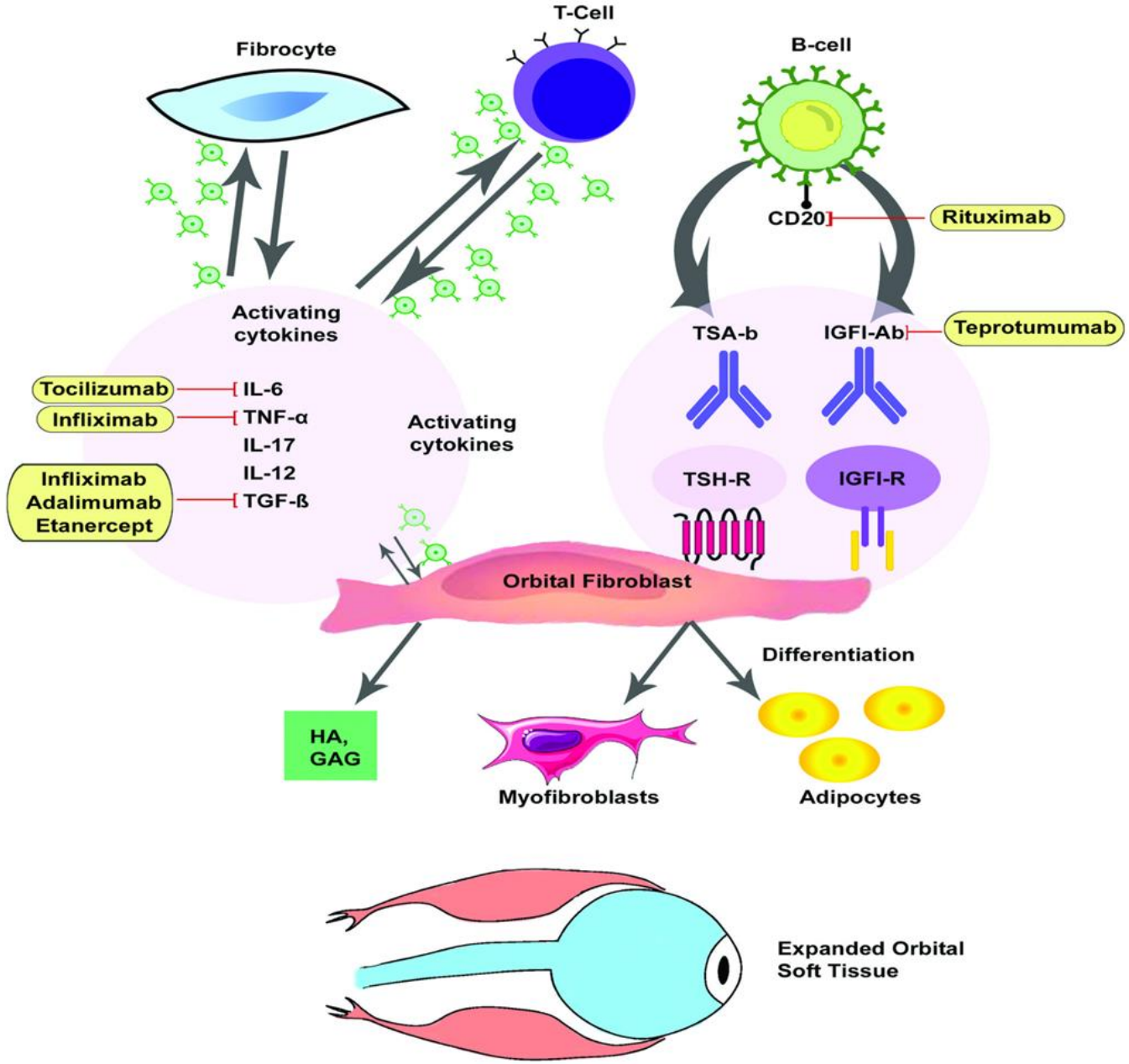
DISCUSSION

- TED is a complex, poorly understood chronic autoimmune inflammatory disorder, predominantly involving the orbital fat and extra ocular muscles.
- Thyroid and orbital tissue share a common antigen.

- Thyroid binding inhibitor Abs,TSH receptor Abs,thyroid receptor Abs binds with thyroglobulin, the TSH receptor, insulin like growth factor (IGF-1) receptors.

- Auto antibodies cross react with the thyroid gland cell and orbital fibroblasts leads to inflammation of orbital fat and extra ocular muscles – **LEHMAN pathway *.**

- ***Graves RJ. Clinical lectures. Lond Med Surg J 1835;7:516-7.***


T-Cell
Fibrocyte
B-cell
CD20
Rituximab
Activating cytokines
TSA-b
IGFI-Ab
Teprotumumab
Tocilizumab
IL-6
Infliximab
TNF-α
IL-17
IL-12
Infliximab
Adalimumab
Etanercept
TGF-ß
Activating cytokines
TSH-R
IGFI-R
Orbital Fibroblast
Differentiation
HA, GAG
Myofibroblasts
Adipocytes
Expanded Orbital Soft Tissue

➢ **According TO BARTLEY[#] et al :**

- Median age of presentation - **43** years for all patients[#]

- **High prevalence in women[#*].**
- Female gonadal hormones (prolactin and estrogen) and X-chromosome inactivation on thyroid gland and immune system greatly contribute to the female predilection .

- **Smokers are twice as likely to develop Graves' disease.[*]**
- **Graves disease patients have 7 times more risk than non smokers.**

- ***#Bartley GB, Fatourechi V, Kadrmas EF, Jacobsen SJ, Ilstrup DM Garrity JA, et al. Chronology of graves' ophthalmopathy in an incidence cohort. Am J Ophthalmol 1996;121:426-34.***
- **** Hall, J. (2011) Guyton and Hall Textbook of Medical Physiology. 12th Edition, Saunders/Elsevier, Philadelphia, 907.***

	CROSS SECTIONAL STUDY FROM NEPAL International journal of clinical medicine, DEC 2016 Dr.PALIKHE SABITA et al and Dr.THAKUR AJIT et al. (n= 117)	INTERNATIONAL JOURNAL OF SCIENTIFIC STUDY, JULY 2019 Dr.PRIYANKA AGNIHOTRI et al (n = 110)	OUR STUDY (n = 40)
MEAN AGE OF PRESENTATION	4 th decade	4^{th} decade	4^{th} decade
SEX INCIDENCE	F(70.2%) > M(29.8%)	F(75.5%) > M(24.5%)	F(75%) > M(25%)
SMOKERS VS NON - SMOKERS	---	22.7%(n=25) and 77.3%(n=85) 1:3.4	20%(n=8) and 80%(n=32) 1:4
THYROID STATUS	75%(n=63)hyperthyroid, 16.7%(n=14)hypothyroid and 8.3%(n=7) euthyroid	30.9%(n=17)hyper 69%(n=38) hypothyroid	85%(n=34)hyperthyroid, 15%(n=6)hypothyroid.

	CROSS SECTIONAL STUDY FROM NEPAL International journal of clinical medicine, DEC 2016 Dr. PALIKHE SABITA et al and Dr.THAKUR AJIT et al.	INTERNATIONAL JOURNAL OF SCIENTIFIC STUDY, JULY 2019 Dr. PRIYANKA AGNIHOTRI et al	OUR STUDY
LATERALITY	---	---	72.5%(n=29)bilateral, 27.5%(n=11)unilateral.
SYMPTOMS	F.B. sensation and Dryness-97%(n=82) Swelling of lids - 73.8%(n=62) Redness- 50%(n=42) Diplopia -4.8%(n=4)	F.B. sensation and Dryness-64.6%(n=71) Swelling of lids - 14.5%(n=16) Redness- 12.7%(n=14) Diplopia -0.9%(n=1)	F.B. sensation and Dryness-60%(n=24) Swelling of lids - 17.5%(n=7) Redness- 10%(n=4) Pain -7.5%(n=3) Diplopia -5%(n=2)

- Usual presentation of TED – Bilateral, may be asymmetric*.
- Majority of unilateral cases tend to become bilateral as the disease progresses, therefore it seems not to carry a prognostic significance.

- **Exophthalmos - most widely known sign of thyroid eye disease***, occurs in 20% - 30% of patients with Graves' disease and
- Upto 40% - 70% of patients with thyroid associated ophthalmolpathy.
- Bilateral in 80% - 90% of cases

- ***Palikhe S, Thakur A, Narayan SD, Sharma AK, Acharya N. Ocular manifestations in thyroid eye disorder: A cross-sectional study from Nepal.Int J Clin Med 2016;7:814-23***

➢**Ocular manifestations of thyroid disease include***:

- Eyelid retraction, periorbital edema, conjunctival injection and chemosis, proptosis, extraocular muscle restriction,
- Exposure keratopathy, and optic nerve compression – indications for orbital decompression.

- **Sympathetic stimulation of the Muller muscle**! - responsible for most of the medically reversible cases of eyelid retraction in patients with Graves disease.
- Ocular dryness may be due to the immunological process associated with thyroid eye disease.

- ***Pal ikhe S, Thakur A, Narayan SD, Sharma AK, Acharya N. Ocular manifestations in thyroid eye disorder: A cross-sectional study from Nepal.Int J Clin Med 2016;7:814-23***
- ***!Tellez M, Cooper J, Edmonds C. Graves' ophthalmopathy in relation to cigarette smoking and ethnic origin. Clin Endocrinol (Oxf) 1992;36:291-4***

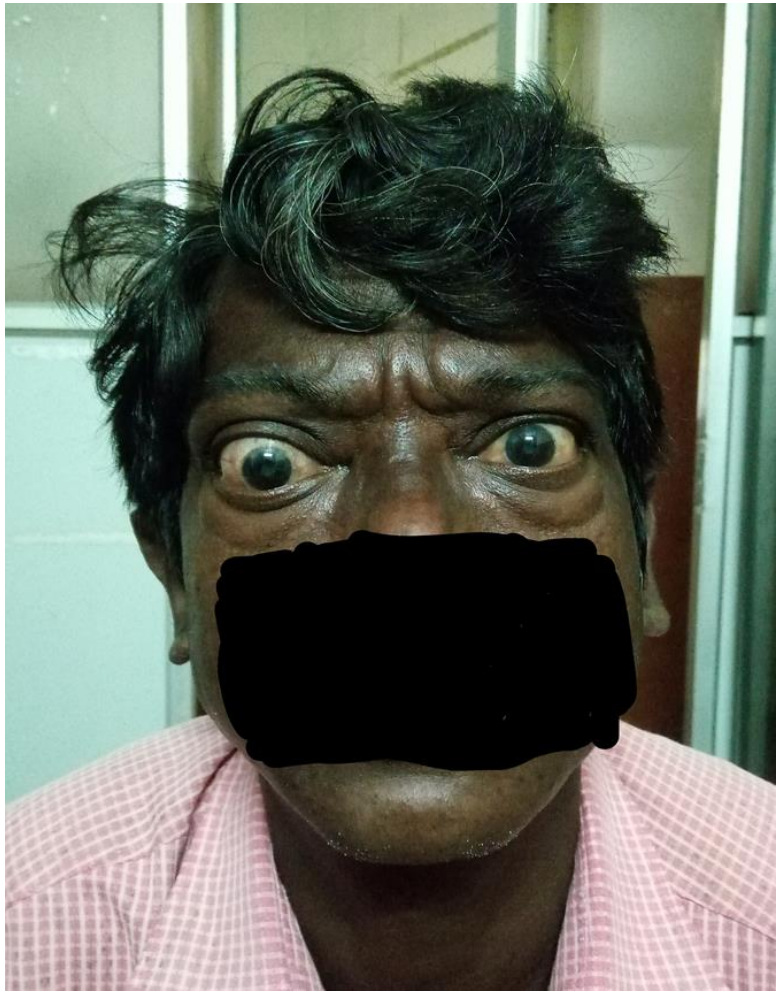
TEMPORAL FLARE AND UNILATERAL PROPTOSIS

YOUNG FEMALE WITH HYPERTHYROIDISM

EXOPHTHALMOS,LID RETRACTION,KOCHER'S SIGN

MOBIUS SIGN

BILATERAL AXIAL ASYMMETRIC PROPTOSIS WITH RESTRICTIVE MYOPATHY



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SIGNS	Lid retraction - 79.8%(n=67) Proptosis -33.8%(n=28) Restrictive myopathy=11.9%(n=10) Corneal ulcer- 7.4%(n=6) Optic neuropathy- 1%(n=1)	Lid retraction - 82.4%(n=17) Proptosis -52.9%(n=9) Restrictive myopathy=5.9%(n=1) Corneal ulcer- 17.6%(n=3)	Lid retraction - 65%(n=26) Proptosis -31%(n=12) Restrictive myopathy=5%(n=2) Exposure keratopathy 0% Optic neuropathy -0%

CONCLUSION

- The ocular manifestations in TED ranges from mild to the most severe form. Hence, early diagnosis and intervention can be beneficial in saving sight and globe*.

- A proper referral system between ophthalmologists and physician is mandatory*.

- Many thyroid disorders are first time diagnosed from ocular manifestations, so a regular health check up with eye check up is necessary to pick up the cases in early stage*.

- ***Palikhe S, Thakur A, Narayan SD, Sharma AK, Acharya N. Ocular manifestations in thyroid eye disorder: A cross-sectional study from Nepal.Int J Clin Med 2016;7:814-23***

- Management should consists of a coordinated, multidisciplinary, approach based on proper staging of the disease and its effect on orbital and ocular structures and should be directed towards improving quality of life[$*].

- ***$Jameson JL, Weetman P. Disorders of the thyroid gland. In: Longo DL,Kasper DL, editors. Harrison's Principal of Internal Medicine. 18th ed.United States of America: McGraw-Hill Education; 2011.p.2923-6.***
- **** Lee HB, Rodgers IR, Woog JJ. Evaluation and management of graves'orbitopathy. Otolaryngol Clin North Am 2006;39:923-42.***

- THANK YOU…..