

Ocular Manifestation in Thyroid Disorder Patient

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ABSTRACT

Background: Thyroid eye disorder is ocular manifestation of thyroid problem in patient with thyroid disorder.

Aim: To evaluate analyze ocular symptoms and eye sign in patients with thyroid disorder.

Materials and methods: This is a cross-sectional study where 247 patients with thyroid disorder were selected on the basis of inclusion and exclusion criteria. Their history was taken in detail about ocular complains and examination was done to illustrate ocular signs.

Results: The most common symptom were itching(20.6%), blurring of vision(18.5%), ocular discomfort(12.1%), headache(11.7%), burning sensation(10.5%), foreign body sensation(9.7%) and watering of eyes(8.1%). The most common thyroid eye sign were dalrymple sign(20.24%), enroth sign(12.95%), mobius sign(8.09%) and ballet sign(4.85%).

Conclusion: All the patient with thyroid disorder should have routine ophthalmologic evaluation despite their thyroid status to minimize ophthalmologic complications.

Keywords: ocular features, thyroid disorder

INTRODUCTION

Thyroid eye disorder is ocular manifestation of thyroid problem in patient with thyroid disorder. Most common presenting symptoms may include burning, itchiness, redness, or grittiness in the eye, blurring of vision, and sensitivity to light. Symptoms range from mild and occasional to severe and continuous. It can lead to blurred vision, instability of the tear film, increased risk of damage to the ocular surface such as scarring of the cornea, and changes in the eye including the neurosensory system.¹ The most common eyelid sign in dysthyroid ophthalmopathy is eyelid retraction followed by lid lag in down gaze followed by eyelid fullness from edema.²

In Grave's disease, it is hypothesized that there is a cross-reactivity against an antigen that is in both thyroid and orbital tissues, which leads to an autoimmune orbital reaction.³

Different epidemiological studies have shown that the prevalence of thyroid eye disorder is between 1 and 2% worldwide.⁴ Studies regarding the prevalence of thyroid eye disorder has been done in Nepal too. The study done in western part of Nepal showed the prevalence of thyroid disorder to be 17.11%.⁵

The aim of this study was to analyze ocular sign and symptoms in patients with thyroid disorder. It is believed that the information obtained from this study shall aid us in such conditions where we require urgent or emergent ophthalmological consultations in such patients and to utilize on making strategies for

treatment and prevention of thyroid eye disease and reducing the major impairment it causes on the patient's quality of life.

METHODS

A cross sectional study was conducted on patients of age more than or equal to 18 years with thyroid disorder attending OPD of the Department of Ophthalmology, BPKIHS. Patients age less than 18 years of age, prior history of ocular surgery or radiotherapy, use of lens and refusal to participate in the study were excluded. All the patients presenting to ophthalmologic OPD with thyroid disease meeting inclusion and exclusion criteria were included in the study over the period of one year. Consent was taken from the patient and data was collected as per the Pro-forma.

Patient were subdivided into hypothyroidism, hyperthyroidism and euthyroidism as per diagnosis done by physician and their latest thyroid function status (TSH and T4 value) following thyroid medication.⁶ Any known case of thyroid disorder if had normal TSH and T4 level after having medication i.e well-controlled thyroid level were considered euthyroid. If the TSH was low and T4 was high they were considered in hyperthyroid state, if TSH was high and T4 was low they were considered hypothyroid state.⁶

Detail history about ocular symptoms were taken and eye examination was done to illustrate different eye sign including Lissamine green test. A drop of sterile, mild anesthetic was instilled into the conjunctival sac, and the patient was allowed to recover from the mild degree of stinging. A drop of Lissamine green 1.0% was instilled onto the surface of the upper bulbar conjunctiva with the upper lid retracted and the patient looking downward. Examination may be done with white or blue light. Abnormal cells stain blue.⁷ Eyelid signs in thyroid eye disease are as follows: Upper eye lid retraction (Dalrymple's sign), lid lag on down gaze (von Grafe's sign), restriction of extraocular movements (Ballet sign), convergence deficiency (Mobius sign), Fullness of eyelid (Enroth's sign), unable to close eye completely during sleep (lagophthalmos).¹

Data were entered in MS excel and transferred to SPSS version 21. Statistical analysis was done using mean, standard deviation, frequency and percentage.

RESULT

The data was collected among 247 patients with known case of thyroid disorder after excluding the ineligible criteria and was conducted over a period of 12 months. The mean age was 52.95 ± 15.63 years with M: F ratio 1:2.7. Among them, 53(21.45%) patient were of hyperthyroidism, 177(71.65%) patient of hypothyroidism and 17(6.88%) patients were in euthyroid state following thyroid medication.

In this study some of the patients had multiple ocular symptoms while there were patients who had only single ocular symptom. The most common symptom that we encountered in patients with thyroid disorder was itching, followed by blurring of vision, ocular discomfort, headache, burning sensation. Out of total 247 patients, itching of eye was the most common symptom, which was present in 51 (20.6%) patients. Other symptoms were blurring of vision which was observed in 46 (18.5%), ocular discomfort was present in 30 (12.1%), headache in 29 (11.7%) and burning sensation in 26 (10.5%) of patient.

Table 1: Distribution of presenting ocular symptoms in patients with thyroid disorder

Ocular complaints	Frequency	Percentage
Forward bulging of eyes	5	2%
Ocular pain	4	1.6%

Discharge	8	3.2%
Ocular discomfort	30	12.1%
Foreign body sensation	24	9.7%
Redness	8	3.2%
Blurring of vision	46	18.5%
Itching	51	20.6%
Watering of eyes	20	8.1%
Headache	29	11.7%
Burning sensation	26	10.5%
Puffiness of eyes	2	0.8%
Double vision	1	0.4%
Blackish spot in front of eye	1	0.4%
Depigmentation of lower lid	1	0.4%

Features of keratitis was seen in 67 patients (27.12%). The most common thyroid eye sign was Dalrymple sign which was present in 50 (20.24%) of patients followed by Enroth sign in 32 (12.95%) of patients, Mobius sign in 20 (8.09%) of patient and Ballet sign in 12 (4.85%) of patients. The patient with hyperthyroidism had more proportion of positive finding for different eye signs whereas the euthyroidism subgroup had the least.

Table 2: Distribution of presenting signs in patients with thyroid disorder

Eye Signs	Hyperthyroidism (n=53)	Hypothyroidism (n=177)	Euthyroidism (n=17)	Total
Lagophthalmos	12 (22.6%)	3(1.7%)	0	15
Keratitis	25(47.2%)	39(22%)	3(17.6%)	67
Dalrymple sign	24 (45.3%)	25(14.1%)	1(5.9%)	50
Von Grafe sign	9(17%)	4(2.3%)	0	13
Enroth sign	15(28.3%)	17(9.6%)	0	32
Ballet sign	8(15.1%)	4(2.3%)	0	12
Mobius sign	12(22.6%)	8(4.5%)	0	20
Lissamine green stain (+)	23(43.4%)	36(20.3%)	2(11.8%)	61

DISCUSSION

The most common symptom in our study was itching present in 20.6% of patient followed by blurring of vision in 18.5%. The most common thyroid eye sign in our study was dalrymple sign in 20.2% of patients which was similar to study conducted Bartley GB et al² which showed dalrymple sign as the most common sign present in 75% of the patients followed by lid lag in 49.5 % of patients, followed by eyelid fullness from edema in 26.5% . The difference of higher percentage of involvement in their study could be because majority of patient in their study were Grave's disease. In another study by Kumar S et al⁸, the most common sign was lid retraction seen in 91% of the cases which was also most common sign in our study.

In a study done by Kendler et al⁹, corneal staining was noted in 17.2% of all eyes which was lower than our study. It was equally severe in men and women, and in patients older than 50 years and in those younger than 50 years. Men more frequently had involvement (21.1%) than women (16.0%).

Our findings are comparable to the study done by Gupta A et al¹⁰, in which corneal fluorescein staining was present in 57% of patient. Our study was in contradiction to the study done by Ismailova et al¹¹ in which positive vital staining with lissamine green was observed in 60.9% of patient which was higher than our study.

Kan E et al¹² found that in their study, 11.8% had upper eyelid retraction, 10.9% had soft tissue involvement (oedema of conjunctivae and lids, conjunctival injection, etc.), 6.4% had proptosis, and 5.5 % had extraocular muscle involvement, whereas no patients had optic nerve involvement which was also similar to our study. Unlike our study, in a study done by Gilbard JP et al¹³, lagophthalmos clinically detectable in 32% of patients; lid lag in 56.25% of patient. Excess tearing (81%) was the most common symptom in their study followed by gritty sensation, foreign body sensation and increased sensitivity to light all at 45% which was higher than findings in our study. The limitation in their study was that they included on patients with Grave's disease and the sample size was smaller compared to ours.

CONCLUSION

The most common ocular symptom was itching, blurring of vision, ocular discomfort and the most common sign was upper eyelid retraction(dalrymple sign). All the patient with thyroid disorder should have routine ophthalmologic evaluation despite their thyroid status to minimize ophthalmologic complications.

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