



Incidence and predictors of SLK in Thyroid Eye Disease



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Objective

- To measure the incidence of lissamine green staining indicative of Superior Limbic Keratoconjunctivitis in patients with Thyroid Eye Disease

Background

- Thyroid Eye Disease (TED) affects 20-25% of patients with graves disease [1]
- SLK is a chronic and recurrent condition characterized by inflammation of the superior bulbar and upper palpebral conjunctiva along with keratinization of the superior limbus and corneal and conjunctival filaments
- Patients affected by TED have higher rates of SLK than the general population
- The factors responsible for this association has not been elucidated

Methods

- Consecutive patients presenting to a TED subspecialty clinic were assessed in a standard fashion
- A complete history and physical were taken for all patients following the VISA template [2]
- SLK was defined as the presence of lissamine green staining at the superior limbus
- Thyroid lab values (TSH, T3 and T4) as well as serum antibody levels (TSI, TBII, TPO and thyroglobulin antibodies) were assessed
- TED related changes (eyelid position, proptosis, strabismus, optic nerve function) as well as ocular surface factors (presence of corneal staining, lagophthalmos and lid lag) were additionally extracted
- Data was extracted from Care Connect UCLA Electronic Health Record and organized into a TED related database
- The incidence in the consecutive cohort was calculated
- Factors associated with SLK were assessed with binary and multivariate statistics
- Statistical analysis was performed utilizing SPSS software

Results

- The sample consisted of 268 patients
- The incidence of SLK in this cohort was found to be 5% (n=13)
 - Of these, 8 were unilateral and 5 bilateral
- In bivariate analysis comparing the SLK to non-SLK cohort there were no differences in terms of
 - Smoking status
 - Duration of disease
 - TSH/T3/T4
 - TSI/TBII/TPO/Thyroglobulin
 - Eyelid position (MRD1/MRD2/Lagophthalmos)
 - Signs of corneal disease (punctate erosions/filaments/mucous plaque)
- Multivariate analysis did not find significant predictor models

Tables

Table 1. Incidence of SLK with Given Symptom				
		SLK Absent	SLK Present	Total
Symptom				
Lagophthalmos Present	N	79	4	83
	Percentage	95.20%	4.80%	100.00%
Chemosis Present	N	96	6	102
	Percentage	94.10%	5.90%	100.00%
Injection Present	N	151	9	160
	Percentage	94.40%	5.60%	100.00%
Any PEE of the Right Eye	N	70	4	74
	Percentage	94.60%	5.40%	100.00%
Any PEE of the Left Eye	N	69	5	74
	Percentage	93.20%	6.80%	100%

Table 2. Incidence of SLK by Smoking Status				
		SLK Absent	SLK Present	Total
Current	N	2	0	2
	Percentage	100.0%	0.0%	100.0%
Never	N	71	3	74
	Percentage	95.9%	4.1%	100.0%
Quit	N	20	2	22
	Percentage	90.9%	9.1%	100.0%

Table 2. Incidence of SLK with prior treatment with steroids				
		SLK Absent	SLK Present	Total
Steroid Treatment	N	10	1	11
	Percentage	90.9%	9.1%	100.0%

Discussion

- The incidence of SLK in this cohort was 5% of patients
- No relation was established between SLK incidence and smoking status, blood work, or the eye lid position
 - The association appears to be idiosyncratic

Limitations

- This study only analyzed patient data from the initial visit, SLK may manifest in subsequent visits and blood work and other variables may also vary
- This study utilized a sample size of 268. A more robust sample size would strengthen the statistical analysis of the study

Conclusion

- Typical demographic, clinical or serum values which are predictive of Thyroid Eye Disease severity are not predictive of SLK
- No clear relationship could be deduced between SLK incidence and Thyroid Eye Disease characteristics nor severity

References

- Tanda ML, Prevalence and natural history of Graves' orbitopathy in a large series of patients with newly diagnosed graves' hyperthyroidism seen at a single center. J Clin Endocrinol Metab. 2013. 98(4): p. 1443-9
- Dolman, P.J., *Grading Severity and Activity in Thyroid Eye Disease*. Ophthalmic Plast Reconstr Surg, 2018. 34(4S Suppl 1): p. S34-S40.