Effect of Haab's striae on corneal parameters in primary congenital glaucoma

Dear Editor,

In congenital/infantile glaucoma, elevated intraocular pressure often leads to corneal enlargement and the development of Haab's striae (HS), causing disruptions in Descemet's membrane.[1] These striae can significantly impact corneal optics, potentially inducing irregular astigmatism and contributing to amblyopia.[2-4] Despite well-controlled intraocular pressure, visual outcomes in patients with HS may remain suboptimal compared to those without.[2-4]

Our prospective study aimed to assess the association between HS and corneal characteristics in primary congenital glaucoma. We compared 13 eyes with HS to 15 age-matched controls under anesthesia, analyzing various parameters, including refractive errors and HS patterns, by using Image J® software [Fig. 1]. We found that HS predominantly exhibited horseshoe and circumferential patterns, mainly located centrally or paracentrally, leading to with-the-rule astigmatism. Notably, the vertical pattern of HS correlated negatively with astigmatism orientation at J45, as indicated by vector analysis [Table 1].

In light of these findings, understanding the impact of HS on corneal optics is crucial for optimizing visual outcomes in congenital glaucoma patients. Our study highlights the importance of considering HS patterns in treatment strategies, particularly in cases where visual acuity assessment remains challenging. Simple tests such as refraction and vector analysis can offer valuable insights into corneal astigmatism, guiding personalized visual rehabilitation approaches.

Considering the implications of HS on refractive outcomes, our study underscores the importance of further research to explore the effects of interventions such as trabeculectomy on these parameters. By elucidating the relationship between HS and corneal astigmatism, we aim to provide clinicians with valuable insights to enhance the management and visual rehabilitation of patients with congenital glaucoma.

Acknowledgement

Dr. Shrikant Bharadwaj for manuscript revision, audio visual department for medical photography.

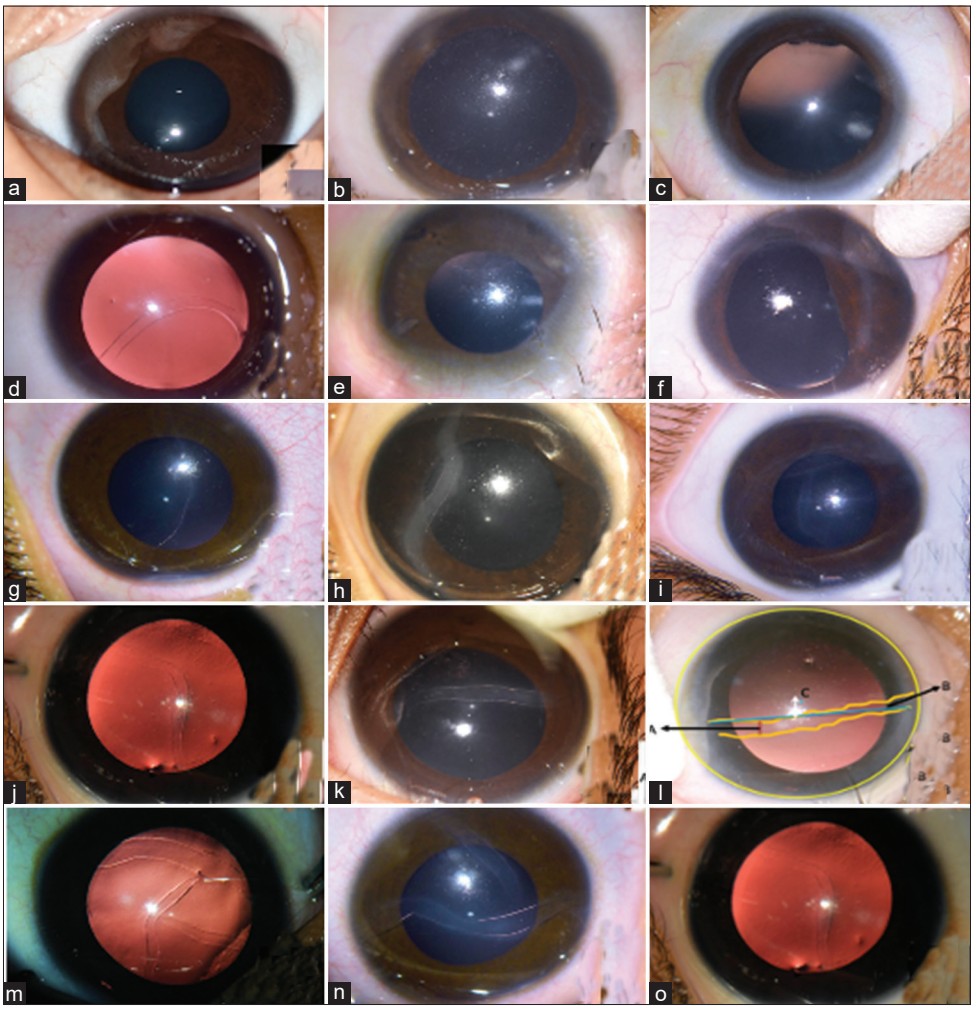

Figure 1: Shows different types of HS seen in our cohort. (a–c) Shows circumferential, (d–f) shows horseshoe, (g–i) shows vertical, (j) shows oblique, (k and l) shows the horizontal pattern and (m–o) shows combinations of HS patterns. (l) Shows markings of parameters: A = Width of Haab's Striae, B = Arc Length of Haab's Striae, C = Corneal center to HS distance, HS = Haab's Striae

Table 1: Results of univariate analysis evaluating the effect of various patterns of HS on corneal parameters

	Spherical Equivalent		J0		J45		K1		K2	
	Coefficient	*P*	Coefficient	*P*	Coefficient	*P*	Coefficient	*P*	Coefficient	*P*
Circumferential	−7.06	0.13	−0.51	0.20	−0.004	0.87	−0.97	0.5	1.74	0.12
Horizontal	5.17	0.19	1.14	0.68	0.17	0.42	−0.31	0.79	-1.46	0.12
Horse Shoe	−4.48	0.30	−0.47	0.19	−0.004	0.98	−0.006	0.99	-1.038	0.32
Oblique	3.8	0.5	0.58	0.22	0.41	0.17	0.26	0.87	0.26	0.85
Vertical	2.5	0.6	0.48	0.23	−0.5	0.045	1.23	0.39	1.44	0.21

HS=Haab's Striae, J0 is the Jackson cross-cylinder power at axis 90° and 180°. In this representation, positive values of J0 indicate with-the-rule (WTR) astigmatism, and negative values indicate against-the-rule (ATR) astigmatism. J45 is the Jackson cross-cylinder power at axis 45° and 135° and represents oblique astigmatism

Financial support and sponsorship: Hyderabad Eye Research Foundation, L V Prasad Eye Institute, Hyderabad, India.

Conflicts of interest: There are no conflicts of interest.

Ramyashri S, Sirisha Senthil[1]

Drishti Eye Centre, Hyderabad, [1]VST Centre of Glaucoma Care, LVPEI, KAR Campus, Hyderabad, Telangana, India

Correspondence to: Dr. Sirisha Senthil, VST Centre of Glaucoma Care, LVPEI, KAR Campus, Hyderabad, Telangana, India.
E-mail: sirishasenthil@lvpei.org

References

1. Hertle RW. Primary congenital open angle glaucoma. In: Kahook MY, Schuman JS, editors. Chandler and Grant's Glaucoma. 6th ed. Thorofare, NJ: SLACK Incorportaed; 2021. p. 661-82.
2. Moschos MM, Nitoda E, Fenzel I, Song X, Langenbucher A, Kaesmann B, *et al.* Prognostic factors of pediatric glaucoma: A retrospective study. Int Ophthalmol 2019;39:359-73.
3. Patil B, Tandon R, Sharma N, Verma M, Upadhyay AD, Gupta V, *et al.* Corneal changes in childhood glaucoma. Ophthalmology 2015;122:87-92.
4. Haddad MA, Sampaio MW, Oltrogge EW, Kara-José N, Betinjane AJ. Visual impairment secondary to congenital glaucoma in children: Visual responses, optical correction and use of low vision AIDS. Clinics (Sao Paulo) 2009;64:725-30.

Access this article online

Quick Response Code:

Website: https://journals.lww.com/ijo

DOI: 10.4103/IJO.IJO_2958_23

Cite this article as: Ramyashri S, Senthil S. Effect of Haab's striae on corneal parameters in primary congenital glaucoma. Indian J Ophthalmol 2024;72:1679-80.