

Editorial

Anterior segment optical coherence tomography in subtypes of angle closure glaucoma



Primary angle-closure glaucoma (ACG) is a serious ocular health care problem especially in Asia, increasing in prevalence as one moves towards the Eastern part of Asia.¹ The disease causes a significant burden of blindness and visual disability in regions where it is most prevalent. With the advent of SD-OCTs, anterior and posterior segment mechanisms of the disease have been better elucidated. However, like primary open-angle glaucoma, ACG likely represents different phenotypes yet to be identified through research on the genetics. In the meantime, significant amount of ongoing research is devoted to better understanding the contribution of various well-defined mechanisms to pathophysiology of the disease in various clinically-defined ACG subtypes. The article by Moghimi et al provides us with additional information in this regard.

The investigators enrolled 115 eyes of 115 patients roughly equally distributed into 3 groups: fellow eyes of patients with a history of acute ACG (FAAG), (chronic) primary ACG eyes (PACG), and primary angle-closure glaucoma suspects (PACS). All eyes had a thorough eye exam, A-scan biometry along with anterior segment OCT (AS-OCT) with Visante before laser peripheral iridotomy. The authors qualitatively determined the main and secondary mechanisms of narrowing of the angle based on AS-OCT images and also quantitatively compared angle parameters of interest in the 3 groups. Twenty-eight eyes were excluded because of poor image quality.

In the qualitative analyses, they found that an exaggerated lens vault (LV), a surrogate for lens position, was more frequently the primary mechanism for the narrowing of the angle in PACG eyes as compared to FAAG and PACS eyes. The quantitative data supported these findings demonstrating that PACG eyes had a smaller iris curvature (a proxy parameter for iris bombe or pupillary block mechanism) compared to FAAG eyes ($p = 0.01$), while the difference of iris curvature between the PACG and PACS eyes did not reach statistical significance ($p = 0.14$); this difference was only slightly smaller than the one between PACG and FAAG (average of 0.05 vs 0.07 mm). Overall, the findings confirm the recent consensus that ACG is, even in individual eyes, a multifactorial disease with various

mechanisms contributing to varying degrees to the narrowing of the angle.

A caveat of the study is that many of the FAAG and PACG eyes were under treatment (average of 1.0 ± 0.7 and 1.7 ± 1.3). Treatment with medications that decrease aqueous secretion might lead to a smaller amount of aqueous being trapped behind the iris and hence lead to an underestimation of iris curvature. The PACG eyes were being treated with a larger number of medications in this study. Other issues include lack of a UBM-confirmation for the presence and magnitude of the plateau iris. Also, any of the 3 major mechanism of ACG (pupillary block, plateau iris or larger lens vault) may actually be potentiated by a thick peripheral iris roll.² No dynamic measurements were made as all the measurements were done in the dark; a change in the iris volume with dilation and the size of pupil can be predictors of angle width.³

One finding that is worth of mentioning is that FAAG eyes had the most unfavorable measurements for all the parameters predictive of narrowing of the angle including a shorter axial length. This could mean that a convergence of unfavorable predisposing factors in a given eye, potentially in varying degrees as shown by Moghimi et al, may be the reason such eyes develop an acute attack of ACG. No choroidal thickness measurements were made and hence the contribution of this important parameter towards a more anterior lens position with larger lens vault and potentially more anterior location of the ciliary body needs to be explored in future studies.⁴

The investigators should be commended for their contribution to our understanding of ACG. It would be interesting to know the relative contribution of the remaining mechanisms once the pupillary block is removed by laser peripheral iridotomy and the authors are well positioned to make such a contribution given their existing dataset.

References

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Peer review under responsibility of the Iranian Society of Ophthalmology.

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