Letter to the Editor Re: Preferred Retinal Locus in Juvenile Macular Dystrophy

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Dear Editor,

We read with great interest the study by Erbezci et al.,[1] which examined the topographic and functional characteristics of preferred retinal loci (PRLs) in juvenile macular dystrophy using scanning laser ophthalmoscopy and microperimetry. The age-stratified analysis and fixation-tracking methodology provide meaningful contributions to the literature on eccentric fixation in inherited maculopathies. However, several aspects merit closer scrutiny to clarify the implications for low-vision rehabilitation.

The authors interpret the age-related shift in PRLs from nasal to superior locations as evidence of cortical adaptation. However, this inference assumes a unidirectional maturational trajectory rather than considering the role of structural lesion dynamics. Because younger patients in the cohort also exhibited significantly larger lesion sizes, the posterior anatomical displacement of PRLs may be a consequence of constrained viable retinal area rather than active cortical optimization.[2] Clinically, this distinction matters because spontaneous superior locus acquisition may not reflect training potential but rather lesion permissiveness, which may vary between individuals.

Additionally, the interpretation that superiorly located PRLs confer functional advantages for reading and mobility warrants more cautious framing. While lower visual field scotomas (associated with superior loci) can indeed facilitate tasks requiring downward gaze, the study did not assess near-vision outcomes such as reading speed, critical print size, or text navigation accuracy. Without these data, the presumed functional superiority remains speculative.[3] A more robust conclusion would require integrating continuous-text performance metrics that directly quantify task-relevant visual efficiency.

Moreover, although fixation stability was quantified via dispersion metrics, the clinical relevance of the measured values remains ambiguous. The study did not clarify whether the reported fixation instability of 2.15±1.43 degrees crosses any threshold predictive of rehabilitation responsiveness. In patients undergoing eccentric viewing training, fixation stability below 2° has been associated with better functional gains.[4] Without such a reference point, the measured stability values are difficult to translate into practical decision-making for visual therapy planning.

The observed correlation between PRL-fovea distance and lesion area reinforces the anatomical basis of eccentric fixation, yet its application to rehabilitation remains underdeveloped. Specifically, it remains unclear whether PRL relocation is feasible when eccentricity exceeds certain angular thresholds. Identifying a critical eccentricity limit beyond which perceptual and oculomotor recalibration becomes less effective could aid in triaging candidates for intensive vision training protocols.[5]

In summary, while this study advances our anatomical understanding of PRL characteristics in juvenile macular

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dystrophy, its translational contribution would be strengthened by linking structural metrics to task-specific visual outcomes and therapeutic thresholds. Clarifying these relationships may inform individualized strategies for optimizing residual vision in young patients navigating educational and occupational demands.

Declarations

Authorship Contributions

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Reply

We thank the correspondents for their thoughtful comments on our article and the opportunity to clarify several points regarding preferred retinal locus (PRL) location in juvenile macular dystrophy (JMD).

First, we agree that the age-related shift in PRL location should be interpreted cautiously. In our cohort, younger patients tended to have both larger lesions and nasally located PRLs farther from the fovea. Therefore, the observed shift from nasal to superior PRL locations may reflect, at least in part, anatomical constraints related to lesion geometry and the distribution of viable eccentric retina, rather than cortical adaptation alone. However, these mechanisms need not be mutually exclusive. In our data, PRL-fovea distance was positively correlated with lesion dimensions, whereas PRL location itself was not significantly associated with lesion size or PRL-lesion distance. This suggests that structural factors likely constrain PRL development, while the contribution of adaptive cortical mechanisms remains to be clarified. In this respect, our findings should be considered hypothesis-generating rather than mechanistic.[1]

Second, regarding the presumed functional advantage of superior PRLs, we agree that this interpretation should be framed cautiously. Our study did not directly assess task-based performance. Nevertheless, previous work suggests that some eccentric retinal locations may be more favorable than others for reading. Reading during eccentric viewing has been reported to be better with the superior retina than with the inferior retina, and reading has also been shown to be faster when text is presented in the inferior visual field than in the left visual field.[2,3] These findings are consistent with the possibility that, in some circumstances, a superior retinal PRL may be advantageous for horizontal reading. However, because our study did not include direct reading-related outcome measures, this interpretation remains inferential rather than directly demonstrated.

Third, we acknowledge that the clinical meaning of the measured fixation stability values remains limited in the absence of validated rehabilitation thresholds. Our study was retrospective and was designed primarily to describe fixation behavior at presentation rather than to predict responsiveness to rehabilitation.

Finally, we agree that the possibility of an eccentricity threshold beyond which perceptual and oculomotor recalibration becomes less effective is clinically relevant. However, our study was not designed to determine a critical angular limit for PRL relocation or trainability. Whether increasing eccentricity constrains later rehabilitation potential likely depends on multiple interacting factors, including residual retinal sensitivity, fixation stability, task demands, and individual neuroplastic capacity.[1,4]

We are grateful for these comments, which help refine the interpretation of our work. We agree that structural lesion characteristics, task-specific outcomes, and longitudinal behavioral adaptation should all be considered when evaluating PRL development in JMD.

Declarations

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