Indian J Med Res 152 (Supplement), November 2020, pp 252-253
DOI: 10.4103/ijmr.IJMR_2321_19

Quick Response Code:

Microscopic image of the fovea in a patient with choroiditis

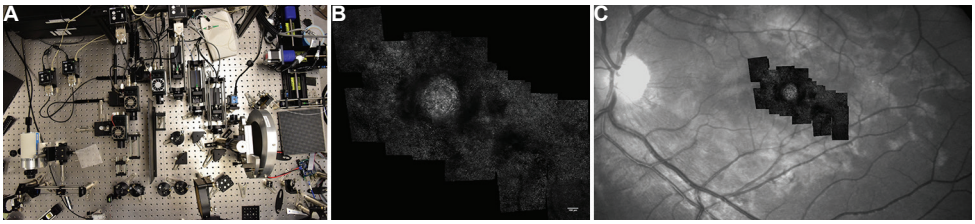

Figure. (A) Image of the adaptive optics scanning laser ophthalmoscope (innovation) set-up for high-resolution imaging of the retina. **(B)** Small images (0.5 × 0.5 mm) of photoreceptors were acquired from adaptive optics scanning laser ophthalmoscope and then multiple images were stitched together to create this cellular montage. **(C)** Cellular structures exposed in a patient with choroiditis (retinal disease) using high-resolution imaging (adaptive optics scanning laser ophthalmoscope) and montaged image of the cells overlayered onto a fundus photograph of the patient.

The innovation was done at the Center for Innovation, LV Prasad Eye Institute (LVPEI), Hyderabad, India, in January 2017. The adaptive optics scanning laser ophthalmoscope (AOSLO) (Figure A) is a high-resolution retinal imaging device which was co-developed with the University of Rochester and was further optimized at LVPEI for imaging of retinal diseases. AOSLO imaging technique is intended to revolutionize the way the retina is seen in the ophthalmic evaluations (this was the first installation of the device in South Asia and the instrument is still in its research phase). The AOSLO is being used to explain the progression of the disease at cellular level. The instrument was calibrated to perform imaging on a specific retinal disease called choroiditis. A case of choroiditis was selected for AOSLO imaging to observe how the disruption occurs in the photoreceptors. A 23 yr old male[†] presented to the Retina department of LVPEI in August 2016, with complaints of seeing black spot in left eye. He previously had multifocal choroiditis in the right eye, involving central retinal artery (CRA) and fovea in the left eye (LE) and was on tuberculosis medication. Upon follow up in August 2019, his multifocal choroiditis LE CRA patch involving fovea was healed.

The AOSLO images were obtained in smaller size (0.5 × 0.5 mm) and then montaged together (Figure B) for better understanding. The montaged image was then mapped to a clinically established diagnostic image (fundus) (Figure C) for a multimodal analysis. This montaged image of photoreceptors shows how the disrupted structure appears and how it differs from the normal region.

The AOSLO has potential for early diagnosis and better understanding of retinal diseases. This technology is applicable to all other retinal diseases and glaucoma cases and will help clinician to observe the changes in the cellular features due to the medication.

***Acknowledgment*:** Authors acknowledge the support of Dr. David Williams, and Advance Retinal Imaging Alliance (ARIA),

[†]Patient's consent obtained to publish clinical information and images.

Flaum Eye Institute, The University of Rochester in building the AOSLO system.

Financial support & sponsorship: Authors acknowledge Hyderabad Eye Research Foundation for financial support.

***Conflicts of Interest*:** None.

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Received November 20, 2019