

PURPOSE

- Previously it has been shown that rod/cone Flicker Modulation Thresholds (FMT) obtained in patients with inherited retinal diseases (IRD) showed relatively larger flicker sensitivity loss in the photoreceptor most affected.^{1,2}
- However, there is no direct comparison available with objective measures of visual function, which is the full field electroretinography (ERG)
- This study explored the association of rod/cone FMT with ERG parameters in patients with IRD.

METHODS

OBJECTIVE MEASUREMENTS OF RETINAL FUNCTION

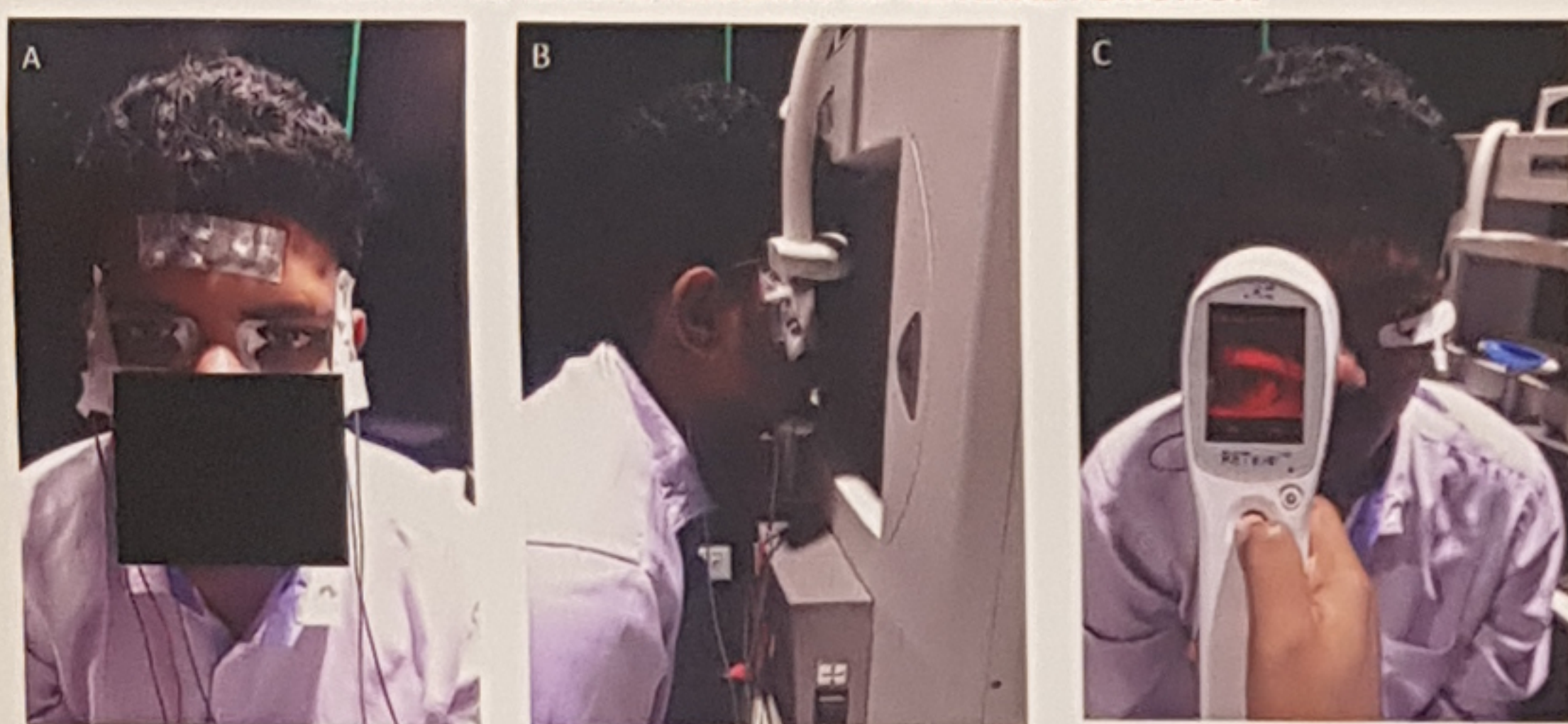


Figure-1: Panel A and B shows the representative picture of the ERG setup using a table-top MetroVision ERG system (France). LVP Zari electrodes were used as active electrode³. Panel C shows how pediatric ERGs was measured using a hand-held LKC machine.

- 20 patients (14 male, 6 female; age range: 10-62 years); Rod-dominated disease [n=8] and cone-dominated disease [n = 12]; Any atypical presentations of the disease were excluded.
- Objective measurements as per the ISCEV protocol⁴
- Subjective measurements were conducted using the Advanced Vision Optometric Testing (City Occupational Ltd, U.K.) using Flicker-plus module^{1,2}

SUBJECTIVE MEASUREMENTS

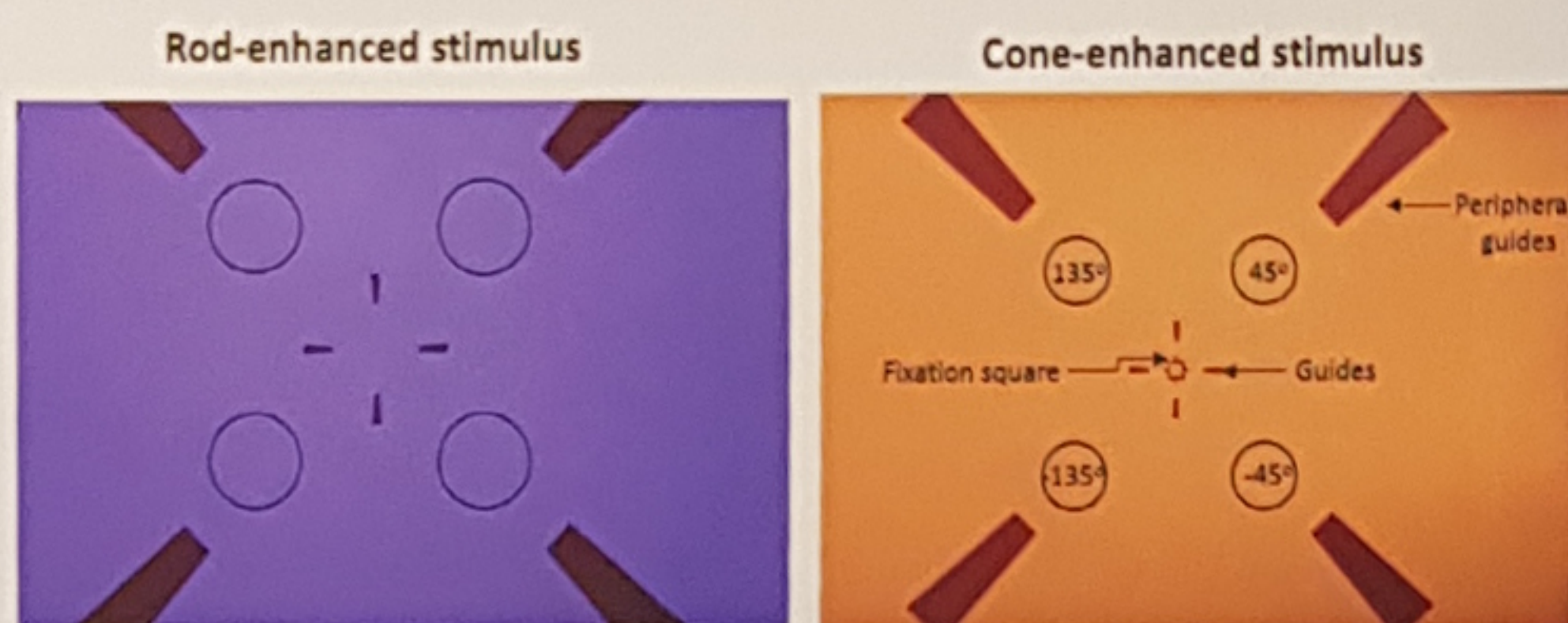


Figure-2: Schematic representation of cone-enhanced flicker stimulus. A blinking fixation square at the centre ensured patient's fixation during the test. There are peripheral flankers to guide the patient the location where the stimulus is expected. The outlines for the stimulus was not present during the actual test. The stimulus is presented centrally and at 4 quadrants.

Scan QR codes at the right bottom of the posters for video demonstrations of the stimulus

- Flicker stimulus: 15-Hz (cone) and 5-Hz (rod) within central 5° field
- Test distance 1m; Light level : 30 cd/m² (cone); 0.5 cd/m² (rod) after use of 1ND goggles
- 5- Alternative Forced Choice test; Staircase procedure: 2 -down 1-up^{1,2}

RESULTS

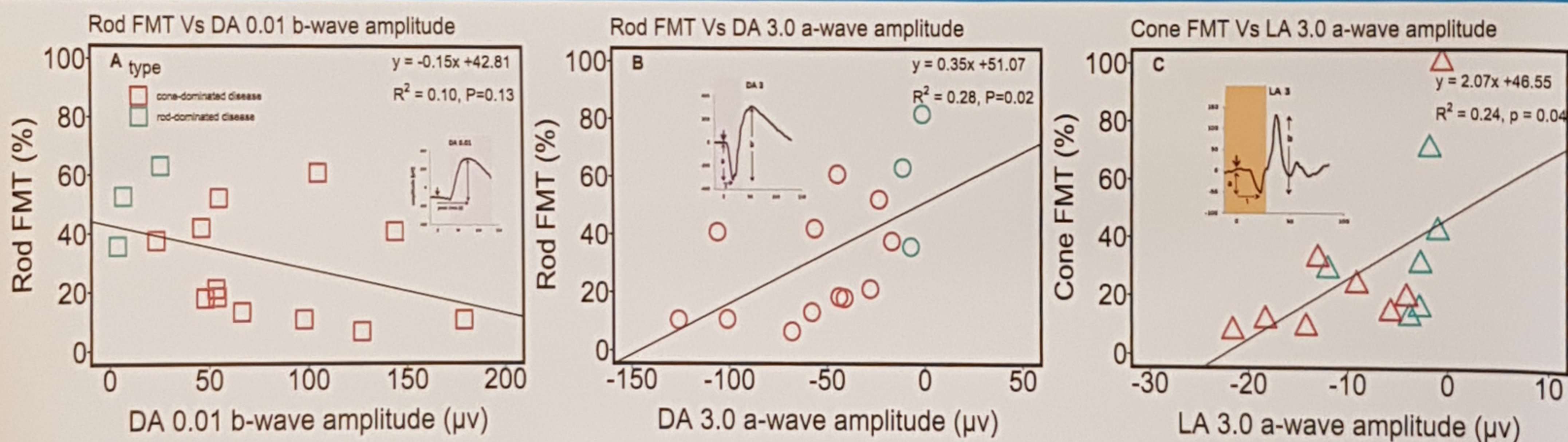


Figure-3. Scatterplot showing flicker modulation thresholds (FMT) plotted against full field ERG parameters. The first two panels on the left (A & B) shows rod FMT plotted against DA 0.01 b-wave amplitude and DA 3.0 amplitudes. Panel C shows cone FMT plotted against LA 3.0 a-wave amplitude. The insets in each of the figure shows the ERG parameter obtained from the waveform corresponding the stimulus and adaptation. The missing data points attributed to non-recordable ERG waveforms. The color coding in each panel differentiate between the two types of photoreceptor specific diseases. The inset shows the representative ERG waveform and highlighted portion indicates the parameter extracted for plotting.

DISCUSSION AND CONCLUSIONS

- Increased validity to the FMT measurements for clinical use ; useful in confirmation of diagnosis in patients suspected of IRD.
- FMTs represents subjective measurement of gross residual photoreceptor function
- Accurate diagnosis allows better counselling regarding prognosis and disease progression.

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