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Electrophysiological Assessment in Birdshot Chorioretinopathy: Use of a Portable Device in the Clinic | IOVS

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Electrophysiological Assessment in Birdshot Chorioretinopathy: Use of a Portable Device in the Clinic

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Abstract

Purpose : Electrophysiological monitoring in Birdshot Chorioretinopathy (BCR) provides an objective assessment of disease activity, and the light-adapted 30 Hz flicker electroretinogram (ERG) has been shown to be sensitive to retinal dysfunction. This study explored use of a hand-held, full-field electroretinographic device (RETeval, LKC Technologies Inc., Gaithersburg, MD, USA) in BCR patients.

Methods : We analysed light-adapted full-field flicker ERG responses from 32 BCR patients. Recordings were obtained with the portable device using skin electrodes and parameters were compared with those obtained using standard recording techniques with conventional equipment. A random number generator was used to select right or left eyes from each patient for statistical analysis.

Results : Mean ERG amplitudes were $17.9 \pm 10.7 \mu\text{V}$ and $62.6 \pm 36.2 \mu\text{V}$ for the portable and conventional recordings respectively. The amplitudes recorded by the two systems were significantly positively correlated ($r=0.76$, $p<0.0001$, $n=32$; Pearson correlation coefficient). The mean peak time from the RETeval™ flicker ERG was $31.4 \pm 4.4 \text{ms}$, which was slightly shorter than the mean peak time from conventional ERGs, which was $32.9 \pm 7.1 \text{ms}$. The peak times were significantly positively correlated ($r = 0.53$, $p = 0.002$, $n=32$; Pearson correlation coefficient).

Conclusions : ERG results obtained by portable device correlated significantly with conventional ERG recordings. Our results suggest that portable recordings could potentially be used in the office setting to provide a rapid assessment of generalised cone system function in these patients, and might be applicable to other retinal diseases. Replication of these findings, and formal repeatability studies will be helpful.

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