**BACKGROUND**

- Subtle impaired macular vision was observed among different psychophysical experimental tasks in migraine (Shepherd, 2005).
- Photophobia, i.e., the clinical hypersensitivity to environmental light stimuli, is reported in most all forms of migraine and many neuro-ophthalmic disorders. It is included as one of the major criteria for migraine in the International Classification of Headache Disorders. During the last years, the mechanisms underlying photophobia were the subject of an intense scrutiny.
- Recent experimental evidences point out a possible involvement of outer and inner retinal layers in hypersensitivity of migraine patients to light stimuli.

**OBJECTIVE**

- To investigate the short-wavelength-sensitive (S) and the medium/long-wavelength-sensitive (ML) cone photoreceptors of the visual pathways in migraine without aura (MO) patients between attacks and in healthy volunteers (HV) by using square-wave focal (Y-B) or red-blue (R-B) visual flicker stimuli.

**DESIGN & METHODS**

- Square-wave focal electroretinograms (FERGs) were recorded in 22 MO patients and 20 HV. For each randomly presented flicker stimulus protocol (Y-B or R-B), 600 sweeps (4Hz repetition rate) were recorded and partitioned in 6 blocks of 100. Fourier analysis allowed extracting from the FERG data the fundamental (1F) and the second harmonic (2F) components (amplitude and phase) that are related respectively to outer and inner retinal activity. Usual headache severity and photophobia during migraine were scored on a 0 to 10 visual analogue scale.

**RESULTS**

- When compared to HV, MO patients had an advanced 1F phase but normal amplitude in all blocks of Y-B FERG. In MO patients, the self-rated intensity of ictal photophobia was positively correlated with attack frequency ($r=0.571$, $p=0.01$), headache severity ($r=0.508$, $p=0.03$), 1F Y-B phase (all blocks $r=0.487$, $p<0.04$), 1F R-B phase ($r=0.521$, $p<0.03$), 2F Y-B amplitude (all $r=0.610$, $p<0.01$), habituation slope ($r=0.686$, $p<0.01$), and 2F R-B phase ($r=0.526$, $p=0.03$).

**DISCUSSION**

- These results suggest that an abnormal signal transduction of the chromatic stimuli from the outer to the inner retinal layers may contribute to cause photophobia in migraine.

**REFERENCES**