

## **Pupil colour responses in patients with congenital and acquired hemianopia**

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**Objectives:** To investigate and compare pupil responses to visual stimuli presented in both the sighted and blind regions of the visual field in patients with congenital or acquired occipital damage.

**Methods:** The P\_SCAN system was employed to generate luminance and chromatic stimuli and to measure the corresponding pupil responses. To ensure that the chromatic stimuli were not detected by achromatic contrast mechanisms and / or rods, the coloured stimuli had zero scotopic contrast, in addition to being photopically isoluminant. The luminance stimuli varied systematically in luminance contrast. All stimuli were presented both in the sighted and the blind regions of the visual field viewed binocularly. We report preliminary findings in patients with congenital (3 cases), acquired homonymous hemianopia (7 cases) and in 7 controls.

**Results:** Pupil responses measured in the blind hemifield of patients with acquired cortical damage were in general of reduced amplitude to the luminance stimuli and were almost absent to the chromatic stimuli when compared to those measured in the corresponding regions of the sighted field and in normal subjects. However, for the congenital group, pupillary responses to both luminance and chromatic stimuli were in general of larger amplitude when imaged in the blind hemifield when compared to responses measured to identical stimuli presented to the sighted field.

**Conclusion:** Pupil responses are in general of reduced amplitude in patients with acquired occipital damage. In contrast, patients with congenital hemianopia show enhanced pupil responses in the blind region of the visual field.