



## Abstract

**Purpose** : The objective, non-invasive examinations of retinal functions before cataract surgery are important. The digital analyses of dynamic pupillometry provides another possibility to do this work. We try to evaluate the chromatic pupillary response as a means of assessing outer and inner retinal functions in patients with cataract.

**Methods** : We recorded the monocular dynamic pupillometry (MonCV3 Metrovision) in cataract patients before any medication and compare their postoperative visual acuity (VA) and the dynamic pupillometry. Dynamic pupillometry to a brief light flash (1s) was recorded in 29 healthy controls and 45 patients with cataract in our laboratory from January 2015 to October 2016. The red, green and blue flash light stimuli were tested separately. The prognostic value for visual acuity and retinal ganglion cells of dynamic pupillometry were explored in cataract patients.

**Results** : The best postoperative visual acuity of these cataract patients were used as standard retinal functions (especially macular zone). We analyzed seven indices in dynamic pupillometry to red, green and blue flash light stimuli in all these cataract patients. Baseline pupil diameter (BPD), minimum pupil diameter (MPD), and maximum dilation velocity (MDV) were negatively correlated with macular function ( $p < 0.01$ ) among cataract patients. Absolute constriction amplitude (ACA), average constriction velocity (ACV), percent pupil contraction (PPC) and duration of contraction (DC) had the most significant relationship with postoperative visual acuity (VA). The red, green and blue lights showed no significant difference in prognosing the visual acuity of cataract patients. The function of retinal ganglion cells can be assessed with duration of dilatation (DD).

**Conclusions** : Some specific indices of dynamic pupillometry significantly display the functions of retinal macular zone in patients with cataract. In addition to assessing retinal ganglion cells, the dynamic pupillometry could prognose the visual acuity in cataract patients.

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