Summary

Improvement in the quality of life in patients with stable maculopathy by Scharioth macula lens implantation and visual plasticity modulation by transcranial electrical stimulation

Aim: To evaluate the change in the quality of life in patients with stable maculopathy after Scharioth macula lens (SML) implantation followed by transcranial electrical stimulation (tES) and visual rehabilitation.

Methods: Our prospective study included 14 patients with dry age-related macular degeneration (AMD) who underwent SML implantation from May 2018 to September 2019 at the Ophthalmology Clinic of the University Hospital in Hradec Kralove. The follow-up period was 6 months. The evaluated parameters were distant best corrected visual acuity (BCVA), near uncorrected visual acuity (UNCVA), intraocular pressure (IOP), central retinal thickness (CRT) and visual plasticity in the form of visual evoked potentials (VEP). The occurence of any complications and subjective satisfaction were also assessed.

Results: The mean preoperative distant BCVA was 0.23 ± 0.09 and 0.17 ± 0.06 at 6 months. The mean preoperative near UNCVA was Jäger (J) 14.9 ± 2.1 and J 4.2 ± 3.1 at 6 months. Preoperative mean near visual acuity (VA) with addition of +6 diopters was J 5.0 ± 2.3. There was no statistically significant difference in the near UNCVA between the stimulated and unstimulated group. There was no difference in the mean values of intraocular pressure (IOP) during the follow-up period. The mean CRT ± SD was 187 ± 44 μm preoperatively and 167 ± 35 μm at 6 months, this decrease of CRT is statistically significant (p=0.03). Results of VEPs in the completed 10 patients showed statistically significant improvement in movement stimulation in the visual field periphery compared to the 1st postoperative day and the 6th month as well as the change in amplitude of the chess stimulus with the square side size of 15 arc minutes compared to the 1st week and the 1st month from the surgery. Changes in both VEPs parameters were due to SML implantation alone. According to questionnaires, patiens confirmed improvement in reading. There were no intraoperative complications. Postoperatively, at 1 patient Nd:YAG capsulotomy (neodymium-doped yttrium aluminum garnet) was performed due to secondary cataract.

Conclusion: The quality of life of patiens after SML implantation improved. The effect of tES on visual rehabilitation in our group of patients has not been confirmed.