Title of the project: Improving the quality of life in patients with stable maculopathy by implanting intraocular macula lenses and modulating visual plasticity by transcranial electrical stimulation

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Summary of 2019 results
Title of the presentation: Improving the quality of life in patients with stable maculopathy by implanting intraocular macula lenses and modulating visual plasticity by transcranial electrical stimulation: intermediary results


A sight loss causes severity-dependent decrement in quality of life comparable to heart diseases or cancer. Macular degenerations are leading cause of legal blindness in the developed countries because there is no definite cure for most of maculopathies. Implantation of a new Scharioth Macula Lens (SML) could be effective in visual improvement. Due to the changed optical properties of the SML implanted eye, the patient needs a targeted visual rehabilitation to stabilize his visual perception. In the project, we strive to improve the quality of life of patients with stable maculopathy through the synergistic effect of SML implantation and visual rehabilitation. In addition to assessing the quality of life, we monitor visual plasticity in elderly at the level of neural (Visual Evoked Potentials), metabolic (functional MRI) and structural (MRI and Diffusion-weighted MRI). In the second year of the project, we selected 10 patients (6 females and 4 males) from the 23 candidates eligible to participate in the macular lens implant program according to the project plan. These ten patients were successfully implanted with SML and postoperatively underwent four-week transcranial electrical stimulation (TEs) in a double-blind protocol. Simultaneously with the TEs, visual rehabilitation was performed, and a reading speed was tested. All selected patients were followed for 6 months, and four times additional ophthalmologic, neurophysiological and psychophysical examinations were completed. Four of the selected patients underwent repeated MRI / fMRI examination in laboratory MAFIL CEITEC, Brno. Current results are satisfactory. Subjectively, patients are satisfied with the result of the surgery and visual acuity improvement. Intermediary results were published (NEKOLOVÁ, Jana, Jan KREMLÁČEK, Miroslav KUBA, Markéta STŘEDOVÁ, Daniela MORÁVKOVÁ, Kristýna DRTÍLKOVÁ a Naďa JIRÁSKOVÁ, 2019. Methods of Improving the Visual Functions in Patients with Stable Maculopathy – Pilot Results of a New Study. Czech and Slovak Ophthalmology. 15. 6., 75(3), 130–135.)

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