Summary

Retinal nerve fiber layer measurement in patients with Alzheimer’s disease
The current ophthalmologist’s possibilities in diagnostics of Alzheimer’s disease

Alzheimer disease (AD) is the most common cause of dementia syndrome and mild cognitive impairment. To enroll the disease most securely there are used so called biomarkers using evidence of changed brain metabolism by positron emission tomography (PET) and in cerebrospinal fluid or the brain’s structure magnetic resonance imaging (MRI). These methods are expensive, organisationally and temporally challenging and burdening for the patients. According to that reasons we are still seeking for alternative attitudes suitable for early diagnosis. The evaluation of thickness of retinal nerve fiber layer (RNFL) which is well accessible to examination through optical aparatus of the eye could be one of the options. The aim of our work was to present current knowledges about Alzheimer’s disease targeting relations of Alzheimer’s disease and an ophthalmological finding. In the next part of this paper we introduce the retinal nerve fiber layer measurement by optical coherence tomography (OCT) as a potential diagnostics method by screening of patients with Alzheimer’s disease and to present our results measured in our cohort of patients. The studied cohort consisted of 24 AD patients with the mean age 74 years /+- 8 years/ 11 man and 13 women, respectively 48 measured eyes and 10 MCI patients with the mean age 72 years /+-8 years/, respectively 19 eyes. The control cohort included 26 patients 12 men and 14 women with the mean age 71 years /+- 7 years/, respectively 51 eyes. All the patients underwent detail ophtalmological checkup with fundus examination in artificial mydriasis and RNFL measurement in the area circular around the optic nerve head using OCT. This procedure and obtained results confirmed the advantages of retinal examination as a easily, feasible, temporary favourable and unburdening method for the patients. The results of our measurement contribute to discussion about the benefit of this procedure in AD diagnostics. Previous works brought inconsistent results and they differed in used procedures and characteristic of selected cohorts.
There is a need of another studies which will analyze utility of OCT in AD diagnostics with the aspect of convenience of this application into clinical practice.