

# Dementia and Cognitive Impairment Reduction after Laser Transcatheter Treatment of Alzheimer's Disease

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## Abstract

Reduced cerebral perfusion and microcirculation are found among AD causes, which should be considered in the development of new treatments for the disease. 165 patients with AD were examined. The examination plan included clinical assessment of dementia severity (CDR), cognitive function assessment (MMSE), laboratory examination, cerebral scintigraphy (SG), rheoencephalography (REG), cerebral CT and MRI, morphometric AD stages assessment (TDR) and cerebral multi-gated angiography (MUGA). 89 patients aged 34 - 79 (average age 67) were selected for the treatment: 31 (34.83%) male, 58 (65.17%) female patients. According to their AD stage, the patients were divided into: TDR-0 (preclinical stage)—10 (11.24%) patients, TDR-1 (early stage with mild dementia, mild cognitive impairment)—28 (31.46%) patients, TDR-2 (medium stage with moderate dementia, cognitive impairment sufficiently persistent)—34 (38.20%) patients, TDR-3 (late stage with sufficiently severe dementia and cognitive impairment)—17 (19.10%) patients. Test Group—46 (51.68%) patients—had transcatheter treatment with low-energy lasers. Control Group—43 (48.31%)—had conservative treatment with Memantin and Rivastigmine. The Test Group had cerebral microcirculation improvement leading to permanent dementia reduction and cognitive recovery which allowed transferring the patients to a lighter TDR group or withdrawing them from the scale. Control Group patients with earlier AD stages (TDR-0, TDR-1, TDR-2) obtained stabilization for a period of 6 months-3 years, with subsequent growth of dementia and cognitive impairment; patients with late AD stage (TDR-3) showed further increase of cognitive impairment and dementia. Transcatheter treatment allows reducing the effects of dyscirculatory angiopathy of Alzheimer's type (DAAT) improving cerebral microcirculation and metabolism, which leads to permanent dementia regression and cognitive impairment reduction. These data show that AD treatment should be comprehensive and aimed at both the recovery of cerebral microcirculation and blood supply and the normalization of amyloid beta metabolism in the cerebral tissue.