

## **Summary - Benefits of retina laser photocoagulation using PASCAL system**

**Objective.** To evaluate functional, anatomical and clinical efficacy, and safety of the pattern scanning laser (PASCAL®) photocoagulation in patients with diabetic retinopathy (DR) and/or diabetic macular edema (DME).

**Methods.** From 2008 to 2013, 235 eyes of 151 patients were treated with pattern laser photocoagulation at the Ophthalmology Department at University Hospital Ostrava. Patients were analyzed in the subgroups A, B and C according to presence of DR and/or DME indicated to panretinal photocoagulation (PRP) and grid or focal macular laser treatment. In the group A, one eye of the same patient was treated with pattern photocoagulation (20 ms/impulse) and the fellow eye with conventional settings. In groups B and C all eyes were treated with pattern photocoagulation. Best corrected visual acuity (BCVA), central retinal thickness (CRT), fundus photography, biomicroscopy, complications, pain response and duration of the treatment were evaluated during the minimum 12months follow-up period. Statistical analysis using parametrical and nonparametrical tests with p less than 0,05 was done.

**Results.** Pattern laser PRP lead to BCVA stabilization in patients with very severe nonproliferative DR (NPDR) and proliferative DR (PDR). DME treatment lead to stabilization and improvement of BCVA (average 1 line) and was noninferior to conventional treatment. During the follow-up intervals CRT was stabilized in patients with absence of DME and decreased in patients with presence of DME. Clinical stabilization of the disease was observed in 70% eyes without DME and in 85% eyes with DME and was noninferior in the pattern treated eyes. Pattern laser treatment was significantly less painful and shorter than conventional treatment. Complications were observed in 4 eyes of 2 patients treated with patterned and conventional settings. The pattern laser photocoagulation was noninferior to conventional PRP.

**Conclusion.** Efficacy of pattern scanning laser photocoagulation and PRP done in one session in patients with DR and DME is comparable to conventional treatment. In addition to this, it is safe, less painful and it leads to significant time reduction of treatment episode.