Summary

Mapping of changes in oxygen saturation in retinal vessels related to the extent of peripheral nonperfusion in patients with retinal vein occlusion

Purpose: The aim of this study was to evaluate the relationship between the ischemic index and the oxygen saturation in retinal vessels in patients with retinal vein occlusion.

Methods: We performed a prospective, cross-sectional study. The cohort consisted of 43 eyes of 43patients with retinal vein occlusions (RVO), 23 of whom had central retinal vein occlusions (CRVO) and 20 who had branch retinal vein occlusions (BRVO). We evaluated the retinal vessel saturation using an automatic retinal oximetry device (Oxymap Inc., Reykjavik, Iceland). The retinal ischemic index (ISI) was determined using ultra-wide-field fluorescein angiography (Heidelberg Engineering GmbH, Heidelberg, Germany).

Results: Mean arterial saturation (± SD) was 100 ± 11 %, mean vein saturation was 52 ±13 % and mean A-V difference was 48 ± 16 % in eyes with BRVO. The average ISI inthe same group was 0.48 (range 0-1). There was no statistically significant correlation between the retinal ischemic index and retinal saturation in the BRVO group. The affected eye in the CRVO group had a mean arterial saturation of 101 ± 6 %, vein saturation of 44 ± 11 % and A-V difference of 58 ± 10 %. The average ISI in the CRVO group was 0.54 (range 0-1). A statistically significant negative correlation between ISI and vein saturation was found in the CRVO group (r = -0,686; $p = 0,0003$). A significant positive correlation between ISI and the A-V difference was found in the CRVO group (r = 0,893; $p < 0,0001$).

Conclusions: Oxygen saturation in the retinal vein and the arteriovenous difference correlated with the ischemic index in CRVO patients. No correlation was found for BRVO patients.