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Structured exercise therapy program for uveal melanoma patients. A randomized-controlled trial on quality of life, visual-coordinative capacity, cardio-pulmonary fitness and microvascular functioning.

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Introduction:
Uveal melanoma (UM) is a rare ocular malignancy with high mortality, for which supportive therapies to mitigate disease- and treatment-related side effects are lacking. Moreover, UM offers a unique opportunity to investigate microvascular responses to exercise in close tumor proximity in vivo. We investigated the effects of a 4–8-week combined exercise intervention on disease- and treatment-related side effects and microvascular functioning in the eye of patients undergoing radiation or ocular resection.
Methods:
This two-arm randomized controlled trial was registered with the German Clinical Trials Register (DRKS00031207). Shortly after diagnosis, patients were randomized to usual care (CG) or a tailored exercise program (IG) consisting of visual-coordinative exercises and high-intensity interval training (HIIT). The program comprised two weekly sessions over 4–8 weeks (max. 4 weeks prehabilitation and 4 weeks rehabilitation), depending on treatment scheduling. The primary outcome was health-related quality of life (QoL). Secondary outcomes included visual-coordinative tests (VCT), cardiopulmonary exercise testing (CPET), dynamic retinal vessel analyzer (DRVA), and optical coherence tomography angiography (OCTA).
Results:
Overall, n=28 patients (IG, n=14; 13M/15F; age: 57.4±11.9 y; BMI ≈26.5 kg/m²) were included. Five patients dropped out before primary endpoint measurements. Preliminary analyses revealed a significant group × time effect for QoL (p=.039, r=.43) favoring the IG. VCT improved in the IG and declined in the CG. CPET performance improved in the IG and was sustained or decreased in the CG. DRVA and OCTA indicated improved endothelial function and physiological structural alterations in the tumor eye in the IG, with no change or decline in the CG.
Conclusion:
Preliminary findings suggest the effectiveness of the structured exercise program in UM patients, with benefits for disease- and treatment-related symptoms and indications of microvascular improvement in tumor eyes. Future studies should confirm these results in larger cohorts and further investigate vascular mechanisms using additional diagnostic measures.

Keywords

uveal melanoma, quality of life, visual-coordinative capacity, microvascular circulation

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

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