

Fractal dimensional analysis for retinal vascularization images in retinitis pigmentosa: a pilot study

FRANCESCA MINICUCCI¹, FOTIOS D. OIKONOMOU² and ANGELA A. DE
SANCTIS³

¹*Ophthalmology Clinics, Department of Medicine and Science of Ageing and
Department of Life, Health and Environmental Sciences
University "G. d'Annunzio" of Chieti-Pescara and University of L'Aquila, Italy
francesca.minicucci@gmail.com*

²*Department of Physics, University of Patras, Greece
pheconom@physics.upatras.gr*

³*Department of Management and Business Administration
University "G. d'Annunzio" of Chieti-Pescara, Italy
a.desanctis@unich.it*

Retinal blood vessels form a complex branching pattern that has been shown to be fractal. The fractal dimension (FD) of the retinal vascular tree lies between 1 and 2. In the literature for healthy human subjects, the retinal vascularization FD was estimated at around 1.7,[1], but it can be changed by the rarefaction or proliferation of blood vessels in the disease scenario, [2]. The aim of this work is to investigate whether fractal dimensional analysis of retinal vascularization images can help for the early diagnosis of genetic retinal diseases as, in particular, retinitis pigmentosa (RP). This would be very useful because it represents the only defense against these illnesses. We use the results from two different imaging techniques, including Optical Coherence Tomography Angiography,[3], to show that for retinal vascularization in patients with RP the FD is lower with respect to the corresponding healthy control group.

References

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