Quantification of vascular microangioarchitectures in physiopathological neural contexts.

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We recently validated a new analytical approach to quantitatively describe vascular microangioarchitectures in tumors and more physiological samples (Righi et al., Sci. Rep. 2018). We are now applying this image-analysis approach to retinal tissues, coping with specific issues. In particular, we addressed the automatic removal of shadowgraphic artefacts and Photoreceptor Region (RPE) hyperreflective signals from both healthy volunteers and AMD patients. The ensuing analyses of manually segmented retinal tissues from angio-OCT scans demonstrated the feasibility of the approach. They also reported how the superficial plexus was only minimally affected in most of the AMD patients. At a difference, the deep plexus of both borderline and acute AMD samples together with the RPE region showed altered microangioarchitectures with reduced proficiency in cargo transport and delivery.

In addition to contribute to the identification of vascular alterations, we are actively developing this approach into an useful tool to monitor disease progression and the effectiveness of anti-AMD therapies. Prospectively, we plan to expand this analysis to investigate the development of ocular alterations in neurodegenerative disorders.

References:


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