

Pathophysiology of Retinal Vasculopathy and Cerebral Leukodystrophy – involvement of endothelial and pericyte dysfunction

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Research question and background

Retinal Vasculopathy with Cerebral Leukodystrophy (RVCL), caused by mutations in the *TREX1* gene, manifests itself as a microangiopathy with a retinal vasculopathy and in addition a wide range of cerebral and systemic conditions, including migraine.

Dysfunction of endothelium and/or pericytes might be part of the pathophysiological pathway through which mutated *Trex1* protein leads to the small vessel disease manifestations of RVCL. By unravelling how *TREX1* mutations cause disease we hope to obtain insights in the pathophysiology of migraine, Raynaud's phenomenon and other (neuro)vascular disorders such as vascular dementia and stroke.

Methods and tissues used

Brain tissue from a control subject without apparent (cerebro)vascular disease was collected through the Netherlands Brain Bank. At Leiden University Medical Centre we collected brain tissue from two deceased RVCL patients. For both patients and the control subject we performed immune-staining on samples from two brain regions: grey matter of the middle temporal gyrus and peri-ventricular white matter. We used several antibodies to study the endothelium and pericytes, including CD31/PECAM-1, Von Willebrand Factor, NG2 and PDGFR β . In addition, the morphology of the basement membrane of endothelial cells was studied using electron microscopy.

Results and conclusion

The project is still in progress.