



Gift of Sight Clinical Research Award 2020 Winner: Rebecca Kaye

Title

Choroidal Vascularity in Chronic Central Serous Chorioretinopathy

Authors & Affiliations

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⁵The VICI Trial, <https://ukctg.nihr.ac.uk/trials/trial-details/trialdetails?trialNumber=ISRCTN92746680>

Purpose

Patients with central serous chorioretinopathy (CSCR) are reported to have dilated, hyper-permeable choroidal vessels with leakage into the interstitial/stromal space. The vascular component of choroidal tissue can be assessed using the choroidal vascularity index (CVI), a ratio of the luminal component of the choroid to the cross-sectional choroidal area.

The aim of this study was to test for differences in the CVI in the eyes of patients with chronic CSCR, fellow eyes and healthy controls.

Methods

Patients were included with chronic CSCR (duration > 4 months) who were treatment naive with a visual acuity of 79 EDTRS letters or worse, optical coherence tomography (OCT) evidence of sub-foveal sub-retinal fluid and fluorescein/ICG angiography evidence of active CSCR. Age-matched controls were included with no ocular history and normal ophthalmic examinations. The central, foveal, enhanced depth imaging OCT image was agreed upon by 2 ophthalmologists. Images were analysed in ImageJ and binarised. The central sub-foveal choroidal area was selected with a width of 1,500µm, the upper border at the retinal pigment epithelium and lower border at the choroid scleral interface. The total selected sub-foveal choroidal area, luminal area (dark pixels), stromal area (light pixels) and CVI were calculated (Fig 1A&B). ANOVA used for statistical analysis.

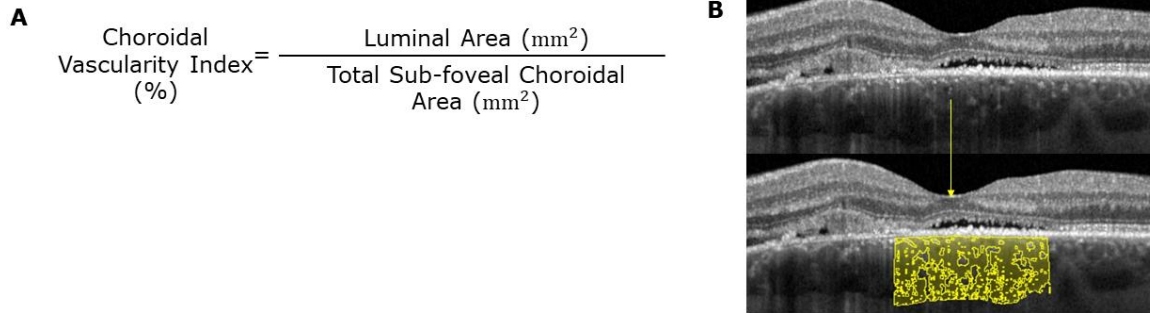


Figure 1.

(A) CVI calculation

(B) EDI-OCT in CSCR. Overlay segments image into luminal and stromal areas.

Results

108 patients with chronic CSCR and 53 controls were included. There was a significant increase in the sub-foveal choroidal area in CSCR patients $2.35 \pm 0.56 \text{ mm}^2$ vs controls $1.82 \pm 0.54 \text{ mm}^2$ ($p < 0.0001$), and in fellow eyes $2.23 \pm 0.58 \text{ mm}^2$ vs controls ($p < 0.0001$). The CVI was reduced in chronic CSCR patients $63.45 \pm 3.10\%$ vs controls $65.43 \pm 2.61\%$ ($p < 0.0001$) and in their affected vs fellow eyes $64.55 \pm 2.90\%$ ($p < 0.01$). This reflects the significant increase in stromal content in affected eyes $0.87 \pm 0.24 \text{ mm}^2$ vs controls $0.63 \pm 0.21 \text{ mm}^2$ ($p < 0.0001$).

Conclusion

These results suggest the sub-foveal choroidal area is increased in both eyes of patients with chronic CSCR adding to the body of evidence that CSCR is a choroidal disease with systemic components. The relative reduction in CVI in chronic CSCR may suggest a persistence of vessel hyper-permeability over dilation; resulting in an increase in stromal area. Tracking a patient's CVI and relative stromal area could be used to monitor disease.