The Value of Spectral Domain Optical Coherence Tomography in Central Serous Chorioretinopathy

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OBJECTIVE
To qualitatively and quantitatively analyse spectral domain optical coherence tomography (OCT) features in patients with treatment-naïve central serous chorioretinopathy (CSCR) and correlate morphometric findings with vision and duration of symptoms.

INTRODUCTION
- CSCR is a disorder of the eye whereby fluid collects between two layers of the retina, termed subretinal fluid (SRF). The presence of SRF disrupts the photoreceptors, causing visual problems.
- Spectral domain OCT is a recently developed non-invasive imaging modality utilising infrared waves. It can be used to provide a high resolution ‘optical biopsy’.
- Previous descriptions of the appearance of CSCR have used older OCT machines that cannot distinguish individual retinal layers.
- We used manual segmentation and feature analysis to gather quantitative and qualitative data from OCT scans.
- We investigated whether or not clinical features correlate with appearance on OCT in CSCR.

METHODS
- We undertook a retrospective study of consecutive patients with CSCR presenting at a tertiary referral ophthalmic clinic.
- If a diagnosis of CSCR was suspected, the patient underwent OCT imaging. Only patients with confirmed CSCR were included in the study.
- Patient (age, sex, presenting eye) and clinical (visual acuity, duration of symptoms) data were collected at the time of presentation.
- The foveal scan from each patient was selected; the retinal layers and fluid were then segmented by hand using an open source imaging program.
- We then used an in-house software program to calculate the measurements of various features on the scan.
- Each scan was also studied for the presence of features that have been previously been reported to be associated with CSCR.

RESULTS
- Data from 31 eyes from 29 consecutive patients diagnosed with CSCR were collected, 19 of whom were men (65.5%).
- The mean age of the patients at presentation was 50 (SD ± 11) years, (range 30 – 70).
- Two eyes (6.5%) were asymptomatic, 13 eyes (41.9%) had acute (<3 months duration) symptoms and 15 eyes (48.4%) had chronic (>3 months duration) symptoms; data on symptom duration was missing for one patient (3.1%).
- Mean visual acuity at presentation was 0.35 (SD ± 0.38) LogMAR, (range -0.08 – 1.18).
- SRF was present in 28 (90.3%) eyes, intraretinal fluid was present in 3 (9.68%) eyes had irregularities on the inner boundary of the SRF and an intact external limiting membrane was identified in 10 (32.26%) eyes.
- Mean central foveal thickness (including fluid) was 327 µm (SD ± 146.7); mean area of SRF was 0.25 mm² (SD ± 0.26).
- The only statistically significant relationship found was between central foveal thickness (excluding fluid) and visual acuity. There were no further statistically significant correlations between these features and duration of symptoms or visual acuity at presentation.

CONCLUSIONS
Feature analysis of spectral domain OCT images has identified several hallmark microstructural abnormalities in patients with CSCR. However, morphometric changes on OCT did not appear to correlate with clinical presentation in CSCR.

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FURTHER INFORMATION
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