Swept Source OCT for Optic Disc Drusen in Children

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Introduction

- OCT is increasingly being used to aid in the detection of Optic Disc Drusen (ODD) in children.
- Swept source OCT (SS-OCT) is now available in Eye Clinics in the UK and globally.
- In this study, we describe the use of this imaging modality and its utility in detection of ODD in a paediatric patient population in University Hospitals Birmingham (UHB).

Methods

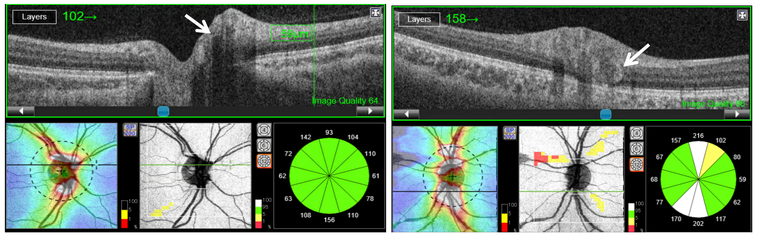
- Retrospective analysis of optic disc images from SS-OCT (Triton DRI, Topcon) in children aged 5-17 years who had confirmed diagnosis of ODD with B-scan Ultrasound.
- Retinal Nerve Fibre Layer (RNFL) thickness differences were compared using Wilcoxon Rank-Sum test (Stata 13.1).
- Images graded by a paediatric ophthalmologist with experience in OCT ODD assessment. Presence of the following ODD features were detected:

ODDS Consortium Features Graded	
• Drusen: surface/deep	• Conglomerates
• Hyper-reflective horizontal lines (HHL)	• Peri-papillary hyper-reflective ovoid masses (PHOMs)

Results 1

- 50 patients (99 eyes) were included
- Median age: 14 years (range: 5-17 yrs) & 64% female
- B-scan ODD Diagnosis: 49 bilateral ODD, 1 unilateral
- Figure 1 below shows SS-OCT images of a 16 year old with arrows showing drusen and PHOMs

Fig 1a: Drusen Fig 1b: PHOMs



- SS-OCT evidence of ODD was present in 97% (96/99 eyes). Table below shows details:

Feature Present	Right Eye (n=50)	Left Eye (n=49)	Both Eyes (n=99)
Drusen: surface &/or deep	42 (84%)	39 (80%)	81 (82%)
PHOMS: any quadrant	30 (60%)	33 (67%)	63 (64%)
Conglomerates: any quadrant	18 (36%)	18 (37%)	36 (36%)
HHL	1 (2%)	1 (2%)	2 (4%)
Any 1 feature present	50 (100%)	46 (97%)	96 (97%)

Results 2

- Deep drusen were noted in 63%, surface drusen in 18.5% & combined surface & deep drusen in 18.5%.
- PHOMS were not associated with significant RNFL thinning in nasal quadrant (where PHOMs were most frequently detected).
- RNFL thickness (nasal quadrant):
  - Right eye: 75µm (with PHOMs) vs 85µm (without PHOMs); p=0.49.
  - Left eye: 78µm (with PHOMs) vs 74µm (without); p=0.84.

Conclusion

✓In this study we have shown that SS-OCT can be used to detect ODD in children using the ODDS Consortium features described in EDI-OCT.

✓We found no significant RNFL thinning associated with PHOMS, as seen in other paediatric studies - RNFL attenuation in ODD in adult studies may be due to progressive thinning of RNFL over time.

✓Ultrasound remains a sensitive diagnostic tool for detecting ODD.

✓Further studies are required to assess diagnostic accuracy of SS-OCT compared to EDI-OCT for ODD.

Reference: Malmqvist L, *et al*. The ODDS Consortium Recommendations for Diagnosis of Optic Disc Drusen Using OCT. J Neuroophthalmol. 2018; 38(3):299-307.