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Real-World Outcomes of Half-Dose Photodynamic Therapy for Central Serous Chorioretinopathy: A 7-Year Audit from a UK Tertiary Eye Unit

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Purpose

Treatment with photodynamic therapy (PDT) for chronic central serous chorioretinopathy (CSCR) is effective in approximately 80–85% of eyes[1] and is thought to act by inducing damage through free radical formation, primarily at the level of the choriocapillaris, resulting in choroidal vascular remodelling[2].
The aim of this audit is to evaluate real-world anatomical and functional outcomes following half-dose verteporfin PDT for CSCR, and to assess service performance in order to identify opportunities for optimising patient care and future PDT service delivery.

Methods

A retrospective single-centre audit was conducted of all patients diagnosed with chronic CSCR and treated with half-dose verteporfin PDT at St Paul's Eye Unit, Royal Liverpool University Hospital, between 2017–2023. Electronic patient records (mediSIGHT) and multimodal imaging (OCT, FAF, and FFA/ICGA) were reviewed.

The treatment cohort included patients who received at least one PDT session and had a minimum of one documented follow-up visit. Exclusion criteria were PDT for non-CSCR indications (e.g., PCV, nAMD), macular neovascularisation secondary to CSCR at baseline, or absence of post-PDT follow-up.
All PDT treatments were delivered using half-dose verteporfin, with treatment planning guided by FFA and/or ICGA. For each treated eye, best-recorded visual acuity (logMAR), subretinal fluid (SRF) status, and central subfield thickness (CST) on macular OCT were recorded at baseline, first follow-up (4–8 weeks), and 6–12 months post-treatment.

The primary outcome was complete SRF resolution. Secondary outcomes included CST change and visual acuity change. Meaningful CST response was defined as ≥20% or ≥50 µm reduction in CST compared with baseline.

Results

Demographics and baseline characteristics

- A total of **102** eyes from **92** patients were included (75% male; mean age 52.4 years [range 18–96])
- A fifth of patients (21%) received bilateral treatment
- Treatment was repeated in 15% of eyes within the first year
- Based on FA/ICGA findings, CSCR at baseline was classified as unifocal or multifocal (Fig. 1)

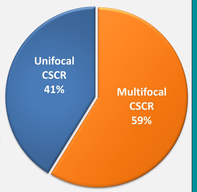

Fig 1. CSCR focality

Results

Anatomical response

a. SRF Resolution:

- Total SRF resolution occurred in **72%** of eyes at the first follow-up visit (Fig. 2a)
- At the 6–12-month follow-up interval, **68%** maintained complete SRF resolution, (increasing to **78%** when excluding lost-to-follow-up cases) (Fig. 2b)

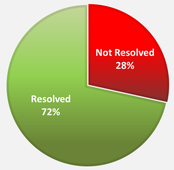

Fig 2a. SRF Status at First Follow-Up

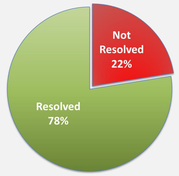

Fig 2b. SRF Status at 6-12 Months (excluding patients lost to follow-up)

b. CST Improvement:

- Mean CST decreased from **367.2 µm** at baseline to **269.9 µm** at first follow-up (–97.3 µm; –26.5%) (Fig. 3)
- A further reduction to **253.7 µm** was observed at 6–12 months (–113.5 µm; –30.9% from baseline) (Fig. 3)
- Meaningful CST improvement was seen in **69%** of eyes at first follow-up and **73.5%** at long-term follow-up
- CST worsening occurred in **17.6%** early and **~15%** at long-term follow-up

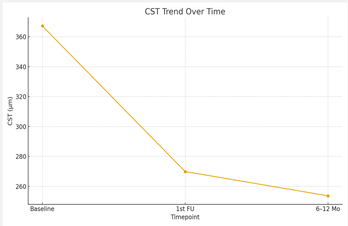

Fig 3. CST Outcomes

Visual outcomes

- Mean logMAR improved from **0.35** at baseline to **0.27** (+4 ETDRS letters) at first follow-up, and to **0.23** (+6 letters) at 6–12 months
- At first follow-up, **45%** of eyes gained ≥5 letters, **27.5%** gained ≥10 letters, and **9.8%** gained ≥15 letters. Loss of ≥5 letters occurred in **9.8%** of eyes (Fig. 4a)
- At 6–12 months, **55.9%** of eyes gained ≥5 letters, **38.2%** gained ≥10 letters, and **20.6%** gained ≥15 letters. Loss of ≥5 letters occurred in only **6.9%** of eyes (Fig. 4b)

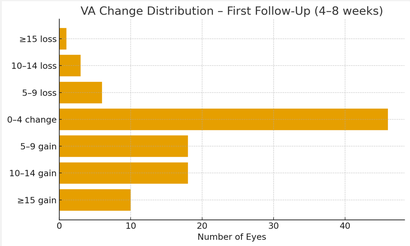

Fig 4a. VA Outcomes at First Follow-Up

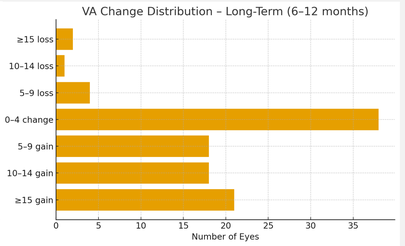

Fig 4b. VA Outcomes at 6-12 Months

Discussions

- Early SRF resolution rates exceeded the early anatomical success reported in the PLACE Trial (51.2%)[3]. Long-term outcomes (68–78%) were closely aligned with the trial's reported 67.2%.
- Letter gain categories demonstrated progressively improving outcomes.

Conclusions

- Half-dose PDT demonstrated robust and durable anatomical and functional benefits in this real-world CSCR cohort. Anatomical success rates were comparable to, or exceeded, those reported in major clinical trials.[3] Visual acuity improved steadily over time, with low rates of vision loss or anatomical worsening.
- These findings support half-dose PDT as an effective, durable, and safe treatment for chronic CSCR, and highlight the need for strengthened PDT service capacity, improved follow-up pathways, and structured triage processes to meet future clinical demand.

References

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