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慢性中央漿液性脈絡膜視網膜病變之治療：以低劑量傳統黃斑雷射模擬次閾值微脈衝雷射的療效評估

Low dose conventional macula laser simulating subthreshold micropulse laser as treatment of chronic central serous chorioretinopathy

吳立理
Li Li Wu

指導教授：謝易庭博士, 王繼娟博士
Advisors: Yi-Ting Hsieh, M.D. Ph.D, Chi-Chuan Wang, Ph.D
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慢性中央漿液性脈絡膜視網膜病變之治療：以低劑量傳統黃斑雷射模擬次閾值微脈衝雷射的療效評估

關鍵字：
慢性中央漿液性脈絡膜視網膜病變、傳統雷射、微脈衝雷射、光動力療法、光學同調斷層掃描

摘要：

目的： 慢性中央漿液性脈絡膜視網膜病變（cCSC）是中年族群中央視力喪失的主要原因之一，特徵為持續超過六週的黃斑下積液。雖然光動力療法（PDT）與次閾值微脈衝雷射（SML）為現行有效治療方式，但受限於費用與設備，臨床應用仍有困難。本研究旨在評估以調整過的低劑量 532 奈米連續波綠光雷射，是否能模擬微脈衝雷射的治療效果。

方法： 本回溯性世代研究納入黃斑下積液持續超過六週，且螢光血管造影無明顯滲漏點、不適合傳統熱凝雷射治療的 cCSC 患者。患者接受低劑量傳統雷射治療（設定功率 60 mW，持續時間 10 ms，光斑直徑 50 微米），以散點、非重疊的方式覆蓋積液範圍。將最佳矯正視力（VA）與中央黃斑厚度（CMT）於低劑量雷射組、半劑量 PDT 組與觀察組之間進行比較。

結果： 共 37 位患者完成 47 次雷射治療。雷射治療後，CMT 由 418 ± 118 μm 顯著下降至 278 ± 76 μm（$p < 0.0001$），VA 由 0.41 改善至 0.62 logMAR（$p < 0.0001$）。PDT 組與觀察組亦顯示類似的解剖與功能改善。亞組分析顯示，症狀持續超過 1.5 個月的患者，接受雷射治療後獲得更明顯的改善。

結論： 低劑量傳統綠光雷射能有效促進黃斑下積液吸收並改善視力，且不會造成視網膜損傷。此方法為 SML 或 PDT 之外，尤其適用於黃斑下積液或螢光血管造影無明確滲漏點的患者，提供一個安全、有效且設備需求較低的替代治療方案。

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Low dose conventional macula laser simulating subthreshold micropulse laser as treatment of chronic central serous chorioretinopathy

Keywords: chronic central serous chorioretinopathy, conventional laser, micropulse laser, photodynamic therapy, optical coherence tomography

Abstract:

Purpose: Chronic central serous chorioretinopathy (cCSC) is a common cause of central vision loss in middle-aged adults, with subretinal fluid persisting beyond six weeks leading to significant visual impairment. While photodynamic therapy (PDT) and subthreshold micropulse laser (SML) are established treatments, their accessibility is limited by cost and equipment availability. This study investigates whether modified low-dose conventional 532 nm green laser can mimic the therapeutic effects of micropulse laser in cCSC patients.

Methods: A retrospective cohort study included cCSC patients with subretinal fluid persisting beyond 6 weeks without identifiable leaking points suitable for conventional photocoagulation. Patients received low-dose conventional laser (60 mW, 10 ms, 50 μm spot) in a scattered, non-confluent pattern over the area of subretinal fluid. Best-corrected visual acuity (VA) and central macular thickness (CMT), were compared among three groups: low dose laser, half-dose PDT, and observation.

Results: Among 37 patients (47 sessions), laser treatment significantly reduced CMT (from 418 ± 118 μm to 278 ± 76 μm, $p < 0.0001$) and improved VA (from 0.41 to 0.62 logMAR, $p < 0.0001$). Comparable anatomical and functional improvements were observed in the PDT and observation groups. Subgroup analysis revealed greater benefit from laser in patients with symptoms exceeding 1.5 months.

Conclusion: Low-dose conventional laser effectively reduces subretinal fluid and improves vision in cCSC without inducing retinal damage, offering a practical and accessible alternative to SML or PDT, particularly for patients with subfoveal fluid or non-identifiable leakage on angiography.

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Introduction:

Chronic central serous chorioretinopathy(cCSC) is one of the leading causes for central vision loss in middle aged patients; the condition usually presents as rapid onset unilateral metamorphopsia and decreased vision. The subretinal fluid causing the symptoms can spontaneously resolve within a few weeks, however as the fluid persists and becomes chronic, it can be debilitating to the vision.

cCSC typically affects middle-aged adults with male predominance, it manifests as dome shaped subretinal fluid and shaggy photoreceptors on optic coherent topography. The choroidal thickness is usually increased, typical pinpoint leakage and smoke stack pattern of dye leakage may be seen on fluorescence angiography. Abnormal choroid vessels with early hyper intensity can sometimes be seen on ICG angiography. However,these findings on angiography are not pathognomonic and cCSC remains a clinical diagnosis. The etiology is not yet fully understood, associated factors include exogenous corticosteroid exposure, possible mechanisms involving steroid-induced choroidal vasodilation, RPE barrier breakdown, and ion pump dysfunction. Psychological stress and type A personality traits are also common risk factors, leading to elevated levels of endogenous cortisol and catecholamines, which disrupt choroidal autoregulation and induce hyperpermeability.[1] Hypertension, obstructive sleep apnea, and Helicobacter pylori infection have also been reported as risk factors, potentially mediated by autonomic dysregulation and inflammatory endothelial damage.[2,3] Increased choroidal thickness, dilation of Haller's layer, and scleral thickening suggestive of choroidal venous congestion, ischemia, and increased hydrostatic pressure.[4] The RPE decompensation and microrips allow fluid to accumulate in the subretinal space. Some evidence suggests an inflammatory component: elevated cytokine levels and platelet activation in aqueous fluid imply choroidal endothelial involvement, although anti-VEGF trials have yielded inconsistent results.[5] Genetic predispositions, including variants in complement factor H (CFH), ARMS2, and cadherin-5 (CDH5), further modulate choroidal vascular behavior and RPE integrity.[6,7,8]

There is no current consensus on standard treatment of cCSC. Treatment options for cCSC include conventional laser, directed to the leaking point and create a thermal burn to seal it, photodynamic therapy (PDT), which induce choroidal thrombosis at the exposed area to address the hyperpermeability of choroid, and high-intensity subthreshold micropulse laser (HSML). Gupta et al first reported the treatment outcome of cCSC with HSML in 2009, which delivers low-duty-cycle laser pulses that stimulate retinal pigment epithelial repair without causing visible damage. Several

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studies compare the anatomical and visual outcome between half dose PDT and HSML; a meta-analysis of 11 studies involving 834 eyes—has shown that HSML achieves similar improvements in best-corrected visual acuity (BCVA) and central macular thickness (CMT) compared to PDT, but with significantly fewer side effects. The PLACE trial may have indicated that half-dose PDT provides faster fluid resolution over HSML, HSML remains a safe and effective alternative when PDT is unavailable or contraindicated. Given its non-destructive mechanism, outpatient applicability, and strong safety record, HSML now represents an increasingly popular modality for cCSC, particularly in cases unsuitable for PDT or conventional laser—offering anatomical and functional benefits without thermal damage.

The concept of subthreshold micropulse laser therapy lies in delivering laser energy in short, repetitive bursts with an intentionally low duty cycle, allowing sufficient thermal relaxation time between pulses. As illustrated in **Figure 1** (adapted from IRIDEX), low-duty cycle micropulse modes generate bursts of energy with minimal overlap of the thermal tails from each pulse. This design facilitates cooling of the target tissue during the "off" phase, thereby preventing cumulative thermal buildup and minimizing the risk of photocoagulation. In contrast, high-duty cycles shorten the “off” time between pulses, leading to increased energy deposition and thermal spread, which resulted in heat accumulation. The continuous-wave (CW) mode, or conventional laser, works with a 100% duty cycle, delivers uninterrupted energy, and leads to thermal rise and tissue coagulation. The subthreshold micropulse laser’s ability to modulate energy delivery while avoiding visible retinal burns or structural damage shows its advantage in treating chronic central serous chorioretinopathy (cCSC), where subfoveal region is commonly involved and non-destructive modulation of the retinal pigment epithelium of corresponding area is desired.

In this study, we proposed that carefully adjusting the parameters of a conventional continuous-wave laser could replicate the therapeutic energy profile of micropulse laser exposure. We retrospectively evaluated a cohort of chronic central serous chorioretinopathy (cCSC) patients treated with low-dose continuous-wave 532 nm green laser to assess preliminary anatomical and functional outcomes.

Method:

We collected data from all patients diagnosed with central serous chorioretinopathy starting in November 2022 in our facility. Multi-image modalities including fluorescence angiography, indocyanine green angiography, and optical coherent topography were obtained at the time of diagnosis. Chronicity was defined as persistent subretinal fluid exceeding 6 weeks despite

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conservative treatment, including smoking cessation, steroid avoidance, oral or topical acetazolamide, and lifestyle adjustment. If leaking point beyond 300um of fovea was identified on FAG, conventional photocoagulation was performed and the patient is excluded from the study. The eligible chronic central serous chorioretinopathy patients were then offered treatment options as half dose photodynamic therapy, low dose green light macula laser, or conservative treatment. **(Fig.2).** Best corrected visual acuity (VA) and central macular thickness(CMT) were recorded at each monthly follow up visit for all patients.

Treatment protocol : Patients who agreed to receive the low dose macula laser were treated with 532nm green light laser. Power setting adjusted to 60 mW, duration of the laser was tapered to the lowest limit 10 ms. The 50 um sized laser spots were applied in a scattered, nonconfluent pattern covering the entire area of subretinal fluid identified under viewing with the Volk Area Centralis® fundus laser lens. The area adjacent to the fovea is not avoided. Generally 40 to 60 spots were applied in each session of treatment. Best corrected vision and central retinal thickness were recorded during each post treatment follow up visits on a monthly basis, and additional sessions of lower dose macula laser were administered if subretinal fluid persisted**.**

Statistical analysis:

Paired t-tests were used to evaluate pre- and post-treatment differences in central macular thickness and visual acuity within each group.

Result:

A total of 47 sessions of low dose conventional laser treatment were performed on 37 patients. Two patients received two sessions and another two patients received 3 sessions. **Table 1** summarize the effects of three three treatment groups—laser photocoagulation (n = 47), half-dose photodynamic therapy (PDT; n = 3), and observation alone (n = 16)—on central macular thickness (CMT) and best-corrected visual acuity (VA, expressed in logMAR) at treatment date and one month after treatment. At baseline, mean CMT values were similar across groups (laser: 418 ± 118 μm; PDT: 413 ± 79 μm; observation: 425 ± 112 μm), with no statistically meaningful differences. Following intervention, all cohorts exhibited significant reductions in CMT: laser-treated eyes decreased to 278 ± 76 μm ($p < 0.0001$), PDT-treated eyes to 238 ± 31 μm ($p = 0.0368$), and the observation group to 274 ± 99 μm ($p = 0.0006$). Visual acuity outcomes paralleled these anatomical improvements. Pre-treatment VA was comparable across groups (around 0.41–0.43 logMAR). Post-treatment, VA improved significantly in all groups: laser

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(0.62 ± 0.28, p < 0.0001), PDT (0.80 ± 0.20, p = 0.0082), and observation (0.68 ± 0.29, p = 0.0006). These results demonstrate that both active interventions and observation alone led to meaningful anatomical and functional improvements in central serous chorioretinopathy, with laser treatment showing the more pronounced CMT reduction. Inclusion of the PDT and observation groups highlights the self-limiting potential of the disease and the relative efficacy of varied therapeutic approaches.

These results suggest that even without active intervention, some patients may experience spontaneous resolution of symptoms, consistent with the natural course of central serous chorioretinopathy (cCSC). To further investigate the potential influence of treatment timing, we subdivided the laser treatment cohort into two subgroups: patients who initiated laser therapy at exactly 6 weeks after symptom onset and those who received treatment after a duration of symptoms exceeding 6 weeks.

A notable difference emerged after excluding the patients who received low dose conventional laser treatment precisely at the 6-week point. **Table 2** compare the outcomes of central macular thickness (CMT) and visual acuity (VA) across laser and observation groups stratified by symptom duration (>1.5 months vs. =1.5 months). Sample sizes ranged from 4 to 37 per subgroup. Baseline CMT was comparable across groups, with means between 385 μm and 483 μm. In the laser-treated groups, both early (>1.5 m) and exact (=1.5 m) cohorts experienced significant CMT reductions from 400.95 ± 112.05 μm to 268.84 ± 62.68 μm (p<0.0001) and from 482.8 ± 122.65 μm to 310.52 ± 111.87 μm (p=0.0121), respectively. The observation cohorts also showed CMT decreases, though the >1.5 m group did not reach statistical significance (385.50 ± 123.82 to 419.25 ± 109.82 μm; p=0.1722), while the =1.5 m observation group exhibited a significant reduction (438.42 ± 110.83 to 258.67 ± 95.44 μm; p=0.0014). Visual acuity metrics mirrored structural dynamics: laser treatment led to VA improvements from 0.43 ± 0.27 to 0.61 ± 0.29 (p<0.0001) in the >1.5 m subgroup, and from 0.45 ± 0.21 to 0.62 ± 0.24 (p=0.0347) in the =1.5 m group. Observation-only cohorts showed significant VA improvement only in the =1.5 m subgroup (0.40 ± 0.22 to 0.73 ± 0.27; p=0.0004), with no meaningful change in the >1.5 m subgroup (p=0.5472).

The desired treatment endpoint is complete resolution of subretinal fluid. To avoid the confounding between spontaneous fluid absorption in acute phase and the treatment effect of low dose laser, we exclude the 10 patients who started treatment at exactly 6 weeks after symptom onset. Of the 27 patients whose symptoms and subretinal fluid exceeds 6 weeks, 19 (70%) reached fluid free status and remained so for the 6 months follow up time. Notably higher than 2 out of 4(50%) in

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the observation group, although statistically insignificant.

Our findings support the current understanding that patients with prolonged symptom duration benefit more from intervention. Patients in the early phase of cCSC may experience spontaneous anatomical and functional recovery, diminishing the need for immediate treatment. In the literature review, the cut point of chronicity ranges from subretinal fluid persisted for over 6 weeks to 6 months across studies. Our study reinforces that cCSC often follows a self-limiting course in its acute stage, and suggests that delaying treatment beyond 6 week period may better identify patients who will benefit most from low dose conventional laser therapy.

Discussion

We do not have enough patients who agreed to receive PDT in our cohort. Reasons include the cost that is not covered by health insurance, and the inconvenience of having to avoid sunlight exposure in the 48 hrs after systemic Visudye infusion. Several studies have evaluated the efficacy of subthreshold micropulse laser therapy (SMPLT) and photodynamic therapy (PDT) in managing chronic central serous chorioretinopathy (cCSC), with varied outcomes depending on disease duration and treatment modality. Krets et al. (2015) reported that in patients with cCSC of 3 months or longer, SMPLT led to a 60% reduction in leakage on fluorescein angiography and a central retinal thickness (CRT) decrease of 69.7 μm, with a gain of +6.7 ETDRS letters. PDT in this cohort achieved greater anatomical improvement, with a 67% reduction in leakage and CRT reduction of 109.8 μm, alongside a visual gain of +8.5 ETDRS letters. Similarly, Scholz et al. (2016) showed superior SRF reduction with SMPLT (79%) compared to PDT (59%) in patients with disease durations of 6 weeks or more, although both groups experienced similar improvements in visual acuity. In a study by Özmert et al. (2016) on patients with symptoms lasting over 6 months, SMPLT achieved higher SRF resolution (87%) and CRT reduction than PDT, though visual acuity gains were not statistically significant in either group.

In the PLACE trial, chronic central serous chorioretinopathy (cCSC) patients presenting early choroidal vascular abnormalities on ICGA (“hot-spots”) were treated based on ICGA guidance. High-density subthreshold micropulse laser (HSML) employed an 810 nm diode laser at a maximal subthreshold power of 1,800 mW, 5 % duty cycle, 500 Hz frequency, 0.2 s pulse duration, and 125 μm spot size, with treatment deliberately sparing the central 500 μm surrounding the fovea to avoid potential damage. In contrast, half-dose photodynamic therapy (PDT) utilized verteporfin

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infusion (3 mg/m²) followed by 83-second laser exposure, targeting both parafoveal and, subfoveal lesions. At 6–8 weeks post-treatment, 51.2 % of PDT-treated eyes had complete resolution of subretinal fluid (SRF), compared with only 13.8 % in the HSML group ($P < 0.001$); this superiority persisted at 7–8 months (67.2 % vs 28.8 %, $P < 0.001$). Additionally, PDT produced significantly greater functional improvement: an increase in best-corrected visual acuity (BCVA) of +4.6 vs +1.4 ETDRS letters ($P = 0.011$), and enhanced retinal sensitivity on microperimetry (+2.01 vs +0.92 dB, $P = 0.046$). The PLACE trial authors attributed HSML's limited efficacy primarily to intentional foveal sparing; they note that many lesions reside within 500 μm of the fovea and thus may receive insufficient energy under this protocol. These findings suggest that parafoveal lesion and the optimal energy delivery to this zone is critical. Half-dose PDT, with its capacity to include foveal-adjacent areas without causing thermal damage to delicate tissue, provides superior anatomical and functional outcomes, indicating the HSML parameters in PLACE trial need to be modified to safely cover the parafoveal region and improve efficacy while preserving foveal integrity.

Taking the major difference between the two treatment modalities into consideration, noninvasive SMPLT can still be considered as first line treatment for cCSC patients. Current subthreshold micropulse retinal laser therapy typically employ a duty cycle of approximately 5% within a 200 ms exposure window, delivering repetitive microsecond-scale pulses to the target tissue while maintaining extended intervals of "off" time. This pulsed delivery strategy limits thermal diffusion beyond the retinal pigment epithelium (RPE), thereby preserving adjacent neural structures while stimulating a therapeutic cellular response. The pathophysiological basis of this approach involves inducing a mild heat-stress stimulus in the RPE, which activates a cascade of beneficial molecular effects: restoration of oxidative/antioxidative homeostasis, modulation of local immune mechanisms, and upregulation of heat shock proteins (HSPs), particularly HSP70, that support cellular repair processes. Indeed, non-thermal, sublethal stimulation with micropulse lasers has been shown to elevate HSP expression without inducing visible retinal damage.

Naturally we are interested in head to head comparison between conventional laser and micropulse lasers in cCSC patients since the noninvasive nature of these two modalities are similar. Piasecka et al. reported on 51 eyes, 35 treated with micropulse green laser and 16 with continuous-wave laser; both groups significantly improved in best-corrected visual acuity (BCVA = 0.89 ± 0.13 vs. 0.71 ± 0.17), with fewer hyper-reflective subretinal deposits in the micropulse group. In the literature review, only two RCTs compare treatment efficacy and safety between

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subthreshold micropulse laser and threshold conventional laser. Liu et al conducted a non-inferiority RCT enrolling 88 patients with CSC to compare the efficacy and safety of 577 nm subthreshold micropulse laser (SML) and continuous-wave threshold conventional laser (TCL) over a 12-week period. Their results satisfied the predefined non-inferiority margin of 5 letters visionary gain (P_non-inferiority = 0.0026), and intergroup differences were nonsignificant in terms of percentage that reached complete SRF absorption. (63.6% vs. 81.8%, P=0.056). Another RCT from Zhou et al. looked at the CSC patients with SRF under 6 months, treated with 577-nm subthreshold micropulse laser (SML) or conventional continuous-wave 577-nm laser (CL). Both treatment groups experienced significant improvements in BCVA and reductions in central foveal thickness at 6 months (all $P < 0.001$), with no statistically significant intergroup differences (all $P > 0.05$).

Both RCTs emphasize the superior safety profile of SML over TCL; In Liu's study, there was no scarring or photoreceptor damage in the SML group, with only minimal mild RPE depigmentation (12%), the TCL group demonstrated a significantly higher frequency of treatment-related retinal alterations and one case of secondary choroidal neovascularization (CNV). In Zhou's study, only 3.6% of SML-treated eyes exhibited retinal pigment epithelium (RPE) damage at one month, compared to 92.7% in the CL group ($P < 0.001$). This indicates that SML achieves equivalent functional and structural efficacy to CL, while preserving retinal integrity and minimizing photocoagulation injury.

However, both studies include only patients with active leaking points identified upon FA and also set restrictions for the location of the leaking point, generally at least 150-300 microns away from the fovea. However, in the literature review, the real world setting, those with unidentified leaking points on FA can take up to 30-50% of the patients. The majority of patients who presented with subfoveal leaking points are excluded from the trial and cannot benefit from the SML or TCL.

To our knowledge, this is the first study that provides an alternative but analogous method involving manually reducing the exposure duration in continuous-wave (CW) laser mode, approaching the lowest threshold of standard CW treatment settings to deliver discrete, low-energy pulses directly to the RPE. This adjustment replicates the tissue-sparing, bioactive dose distribution achieved in micropulse mode, thereby eliciting similar stress-responses and HSP upregulation while minimizing collateral damage to the overlying retina.

"Threshold" refers to the lowest power limit that would leave a light white spot, or grade 1

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laser burn on the target retina. However, photocoagulation is not the desired mechanism in micropulse therapy. If we try to deliver several bolus of small dosage of laser energy to the RPE just enough to induce upregulation of heat shock protein, that would enhance fluid absorption function of the RPE. We can boldly say there's no need to test for threshold level at the arcade at all. In our study we did not test for threshold power at the arcade, but directly adjusted laser settings to the minimum of 60mW. The idea is to induce heat shock protein upregulation and no thermal response or whitening of the retina is expected to be seen during the treatment. To avoid non-intended retreatment of the same area and subsequent undesired accumulated thermal response of the target tissue, we also reduce the spot size to 50 um in diameter and apply the laser spots in a scattered nonconfluent pattern to minimize that risk.

Our findings extend this evidence by demonstrating comparable improvements in central macular thickness and visual acuity using low-dose continuous-wave green laser, suggesting that energy titration may enable non-destructive, effective treatment for cCSC. Our results fill in the gap for the patients with subfoveal or non identifiable leaking points on fluorescence angiography. and provide them with a noninvasive, safe, and effective treatment option.

These preliminary results support the adaptability of existing laser systems to mimic micropulse effects, facilitating broader clinical access to subthreshold-style therapies without specialized equipment. Larger, prospective studies are needed to validate these promising outcomes.

Conclusion

Our study proposes a simple treatment regimen that can be performed with the conventional argon laser machine. Treatment is effective in enhancing the subfoveal fluid resolution and consequent vision improvement for cCSC patients, especially those who do not demonstrate definite leaking points. It also offers a promising treatment option for the practitioners whose facilities do not have Fluorescein or indocyanine green angiography available, so that patients can be treated locally without referrals.

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Figure 1. Schematic illustration of energy build up in retinal tissue with different laser duty cycles

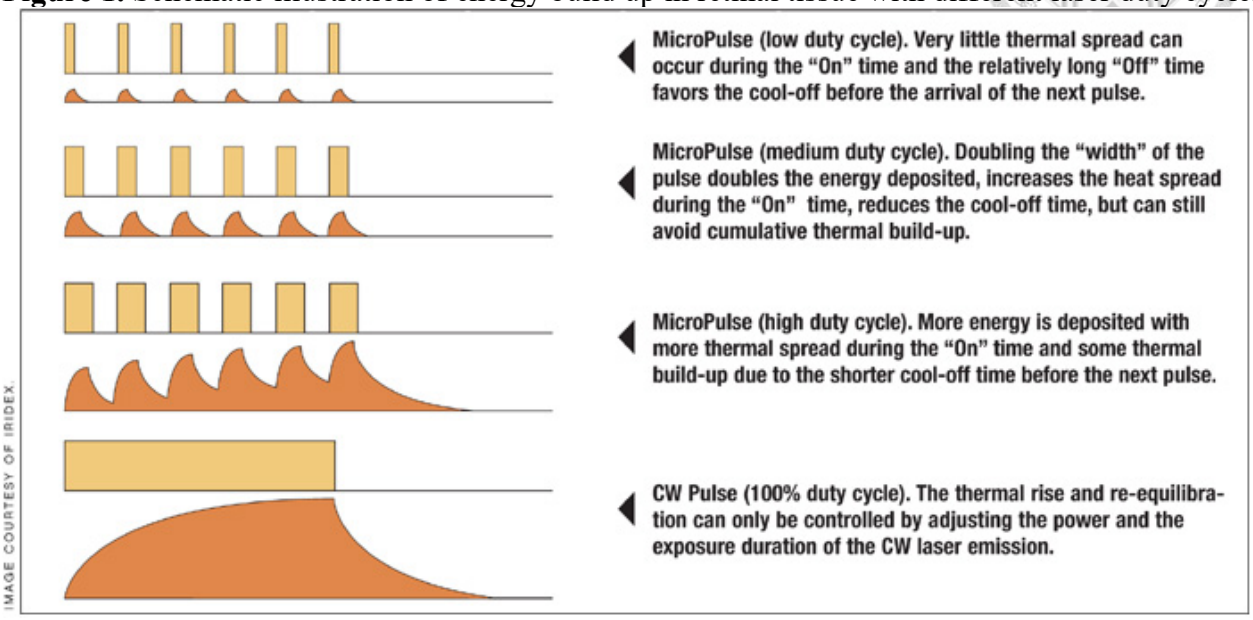
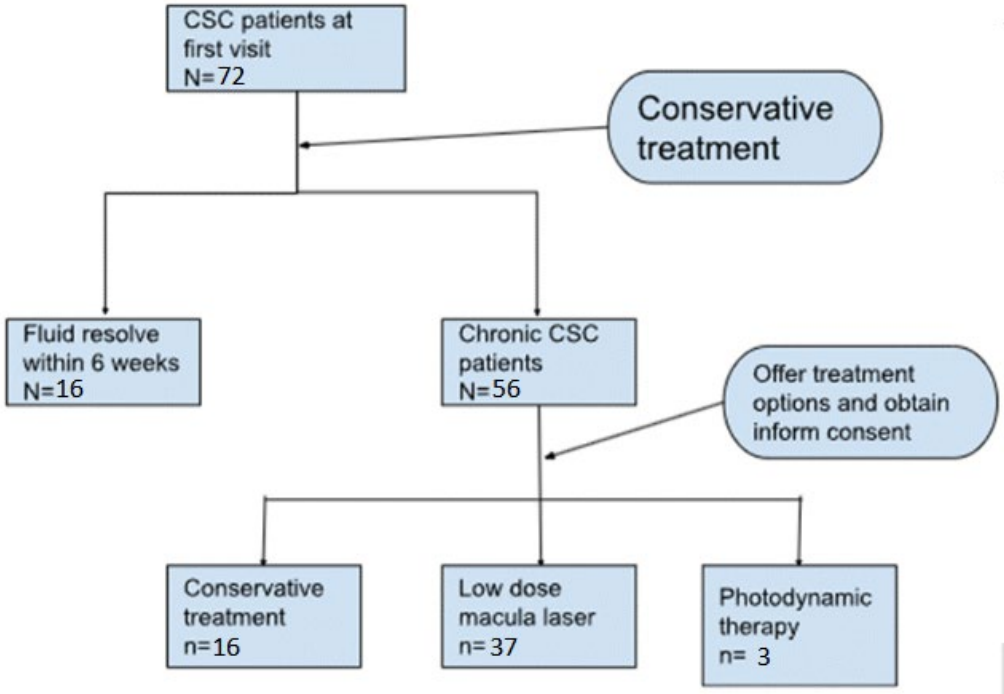


Figure 2. Flowchart of the cohort study where subretinal fluids exceed 6 weeks are categorized as chronic and offered different treatment option



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Presenting case

Figure.3 (A)A 56 year old man with no underlying disease has chronic recurrent CSC history in the left eye. He had 2 episodes of subfoveal fluid accumulation that gradually resolved over a 3 to 5-month-period. The third recurrence had persisted for 11 months despite conservative treatment before he agreed to the treatment option of low dose macula laser. Vision 20/50 with CMT 435um (B) 1 month after the first session of treatment. OCT showed minimal SRF and slightly disturbed IS/OS junction, VA 20/30 CMT 220um (C)4 month after the first session the patient complained of new metamorphopsia in the left eye, vision remained 20/30 but OCT showed recurrence of subfoveal fluid CMT 435um. (D) 1 month after the second session of treatment. No Fluid on OCT with restored photoreceptor vision 20/25. The patient has remained fluid free and maintained a similar vision level for 2 years afterwards.

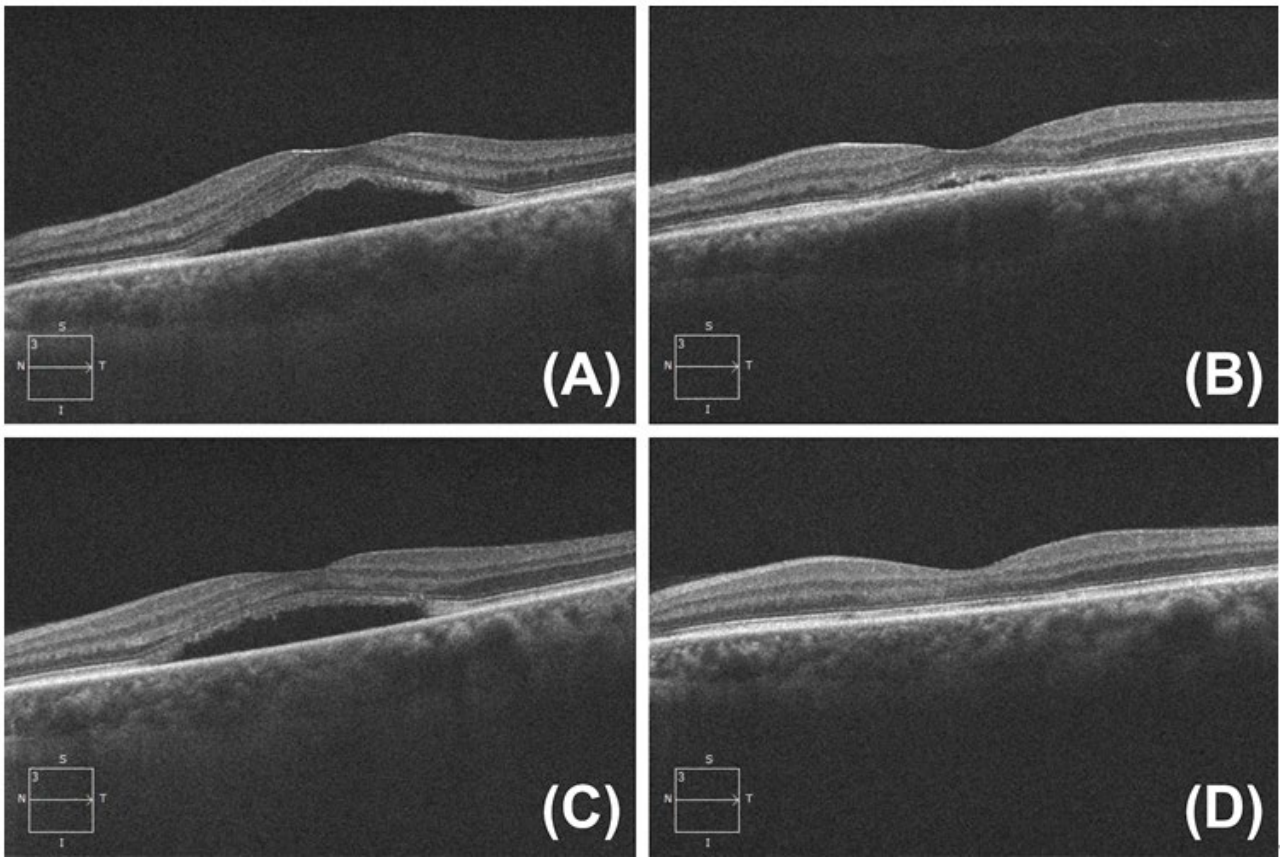

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Table 1 : comparison of pre and post treatment central macular thickness and visual acuity by groups

Variable	Timepoint	Laser (N = 47) Mean ± SD	PDT (N = 3) Mean ± SD	Observation (N = 16) Mean ± SD
CMT (μm)	Pre-Tx	418.36 ± 117.97	413.00 ± 78.62	425.19 ± 112.40
	Post-Tx	278.13 ± 76.48	237.67 ± 31.34	273.81 ± 99.29
	P value	< 0.0001	0.0368	0.0006

VA (logMAR)	Pre-Tx	0.43 ± 0.26	0.43 ± 0.21	0.41 ± 0.21
	Post-Tx	0.62 ± 0.28	0.80 ± 0.20	0.68 ± 0.29
	P value	< 0.0001	0.0082	0.0006

CMT = Central Macular Thickness; VA = Visual Acuity; SD = Standard Deviation; logMAR = logarithm of the Minimum Angle of Resolution; PDT = Photodynamic Therapy.

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Table 2: Effect of Low-Dose Conventional Laser Versus Observation on Central Macular Thickness and Visual Acuity in cCSC Patients Stratified by Symptom Duration.

Measure	Laser (>1.5 m)	Observe (>1.5 m)	Laser (=1.5 m)	Observe (=1.5 m)
N	37	4	10	12
CMT Pre (Mean ± SD)	400.95 ± 112.05	385.50 ± 123.82	482.8 ± 122.65	438.42 ± 110.83
CMT Post (Mean ± SD)	268.84 ± 62.68	419.25 ± 109.82	310.52 ± 111.87	258.67 ± 95.44
P-value	<0.0001	0.1722	0.0121	0.0014
VA Pre (Mean ± SD)	0.43 ± 0.27	0.45 ± 0.19	0.45 ± 0.21	0.40 ± 0.22
VA Post (Mean ± SD)	0.61 ± 0.29	0.53 ± 0.30	0.62 ± 0.24	0.73 ± 0.27
VA P-value	<0.0001	0.5472	0.0347	0.0004

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