INPLASY

Efficacy of subthreshold micropulse laser for acute central serous chorioretinopathy: A Systematic Review and Meta-Analysis

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 07 August 2024 and was last updated on 07 August 2024.

INTRODUCTION

Review question / Objective P: adult (age ≥18 years) patients with CSC diagnosed based on both clinical characteristics and multimodal imaging with a history of visual impairment lasting within six months.
I: subthreshold micropulse laser/selective retina therapy.
C:photodynamic therapy, conventional laser, Anti-VEGF drugs, mineralocorticoid receptor antagonist, mindfulness-based stress reduction, or observation.
O: Primary outcomes: best corrected visual acuity (BCVA) and central macular thickness (CMT). Secondary outcomes: subfoveal choroidal thickness (SFCT) and complete resolution of SRF, retinal sensitivity, 25-item National Eye Institute Visual Function Questionnaire (NEI-VFQ25) score, and adverse events.
S: randomized controlled trials, retrospective and prospective cohort studies.
We performed a meta-analysis of studies that compared the efficacy and safety of subthreshold micropulse laser/selective retina therapy with those of other interventions for acute CSC.

Rationale There is still no consensus about a standard intervention for acute Central Serous Chorioretinopathy. In recent years, the subthreshold micropulse laser for its effectiveness in several chorioretinal diseases and avoidance of laser-related damaging effects has been applied to treat Central Serous Chorioretinopathy. several studies had proved that subthreshold micropulse laser could result in the resorption of SRF without causing visible retinal scarring, and can even be considered as a cheap alternative to photodynamic therapy in the treatment of Central Serous Chorioretinopathy. Therefore, we performed a meta-analysis of studies that compared the efficacy and safety of subthreshold micropulse laser with those of other interventions for acute Central Serous Chorioretinopathy.

Condition being studied Central serous chorioretinopathy is a common macular disease characterized by serous detachment of the

neurosensory retina with or without retinal pigment epithelium detachment. It often causes central vision disturbance, especially in men in their third to fifth decades. Acute Central Serous Chorioretinopathy is usually considered a self-limited condition and tends to resolve spontaneously at six months. Nevertheless, even existing SRF for only a short period, it may cause irreversible damage to photoreceptors, leading to a visual decrease. Therefore, intervention is also necessary in acute Central serous chorioretinopathy cases.

METHODS

Participant or population Adult (age ≥18 years) patients with Central Serous Chorioretinopathy diagnosed based on both clinical characteristics and multimodal imaging with a history of visual impairment lasting within six months.

Intervention Subthreshold micropulse laser/ selective retina therapy.

Comparator The control intervention could be photodynamic therapy, conventional laser, Anti-VEGF drugs, mineralocorticoid receptor antagonist, mindfulness-based stress reduction, or observation.

Study designs to be included Randomised controlled trials, retrospective and prospective cohort studies.

Eligibility criteria Exclusion criteria were: (1) noncomparative single-arm studies, case reports or series (with cases < 10 patients), and animal studies; (2) lack of availability of full-text articles; (3) outcomes or data presented in a format which cannot be extracted for analysis; (4) studies including double reporting.

Information sources The PubMed, Cochrane Library, Web of Science and Embase databases.

Main outcome(s) Best corrected visual acuity and central macular thickness.

Additional outcome(s) subfoveal choroidal thickness (SFCT) and complete resolution of SRF, retinal sensitivity, 25-item National Eye Institute Visual Function Questionnaire (NEI-VFQ25) score, and adverse events.

Quality assessment / Risk of bias analysis The quality of the included randomized control trials (RCTs) was assessed using the Cochrane Collaboration risk of bias tool 2.0 Prospective controlled studies and retrospective controlled studies were assessed by the Newcastle–Ottawa Scale assessment tool.

Strategy of data synthesis The dichotomous variables were summarized as risk ratio (RR) with 95% confidence interval (CI). For continuous outcome measures, weighted mean difference (WMD) or standardized mean difference (SMD) and their respective 95% CI were used for meta-analysis.
P values < 0.05 were considered indicative of statistical significance. I2 value greater than 50% was considered indicative of significant heterogeneity among the included studies. The results were shown as forest plots.
Statistical heterogeneity between clinical trials was assessed by the χ2 test. When P > 0.05 or I2 < 50%, a fixed-effects model was applied for assessment. Otherwise, a random-effects model was performed.
Publication bias was assessed using a funnel plot and Egger's correlation tests.

Subgroup analysis Subgroup analysis was performed to identify whether clinical outcomes would be different in the various groups.

Sensitivity analysis Sensitivity analysis was performed to assess the influence of each individual study on the pooled summary estimates.

Country(ies) involved China.

Keywords Acute central serous chorioretinopathy; Subthreshold micro-pulse laser; Photodynamic therapy; Conventional laser; Meta-analysis.

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