

INPLASY

A Meta-Analysis Comparing Visual Outcomes in Central Retinal Artery Occlusion Patients Treated with Thrombolytic Therapy, Hyperbaric Oxygen, or Conventional Management

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Wu, BQ; Kuo HT; Hsu AY; Hsia, NY; Chiang, CC; Lin, CJ; Lai, CT; Chen, HS; Tsai, YY.

Corresponding author:

Chun-Ju Lin

doctoraga@gmail.com

Author Affiliation:

China Medical University Hospital.

ADMINISTRATIVE INFORMATION

Support - N/A.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202450008

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 03 May 2024 and was last updated on 03 May 2024.

INTRODUCTION

Review question / Objective This study aimed to assess the visual outcomes of commonly used CRAO treatments.

Rationale There is a lack of consensus regarding the reported treatment outcomes for central retinal artery occlusion (CRAO).

Condition being studied Central retinal artery occlusion (CRAO) is an ophthalmologic emergency characterized by the partial or complete blockage of the central retinal artery (CRA). Known treatments for CRAO include intra-arterial thrombolysis (IAT), intravenous thrombolysis (IVT), and hyperbaric oxygen therapy (HBO). Additionally, conservative or conventional standard therapy (CST), such as anterior chamber paracentesis, hemodilution, vasodilator injections, and ocular massage, have been previously described.

METHODS

Search strategy This meta-analysis was conducted in accordance with the Meta-analysis of Observational Studies in Epidemiology (MOOSE) and the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) reporting guidelines. Relevant data was collected from Scopus, Google Scholar, and PubMed using search terms of interest. Search terms included "thrombolysis," "hyperbaric oxygen therapy," "conventional standard therapy," and "central retinal artery occlusion." A manual search of original studies was performed to identify articles potentially missed by the database searches and relevant citations in the identified literature were also searched. Only articles of the English language published in peer-reviewed journals from the earliest record to February 2024 were included in our current meta-analysis.

Participant or population Patients with Central retinal artery occlusion.

Intervention Intra-arterial tissue plasminogen activator (IAT), intravenous thrombolysis (IVT), hyperbaric oxygen therapy (HBO), and conventional standard therapy.

Comparator n/a.

Study designs to be included Meta-Analysis. Involves patient-level clinical data extracted from studies reporting BCVA-related treatment outcomes for CRAO. Results were merged in a random-effects model, and the pooled mean difference (MD) was calculated.

Eligibility criteria Regarding inclusion criteria, studies involving (1) patients diagnosed with CRAO; and (2) reported the efficacy of different treatment modalities for CRAO, focusing on quantitative visual acuity measurements such as BCVA before and after intervention were recruited. Regarding the exclusion criteria, this meta-analysis excluded studies that were not in English, involved animal subjects, didn't contain full texts or didn't fully report relevant clinical data, and reported outcomes other than best-corrected visual acuity. Studies involving branch retinal artery occlusions and retinal vein occlusions were also excluded.

Information sources The databases of Scopus, Web of Science, and PubMed were systematically searched.

Main outcome(s) The pooled estimate of treatment effectiveness in terms of BCVA changes from baseline to post-CRAO treatment was calculated.

Additional outcome(s) n/a.

Data management n/a.

Quality assessment / Risk of bias analysis To assess the risk of bias in each included study, two researchers evaluated randomized controlled trials according to Cochrane risk of bias criteria, classifying them as "low," "unclear," or "high." A study was deemed to have a high risk of bias if at least one domain received a high-risk rating. The results were visualized with Risk-Of-Bias VISualization (robvis) packages. The non-randomized studies were evaluated by Newcastle-Ottawa Scale (NOS).

Strategy of data synthesis Patient-level clinical data were extracted from studies reporting BCVA-

related treatment outcomes for CRAO. Results were merged in a random-effects model, and the pooled mean difference (MD) was calculated.

Subgroup analysis n/a.

Sensitivity analysis Patient-level clinical data were extracted from studies reporting BCVA-related treatment outcomes for CRAO. Results were merged in a random-effects model, and the pooled mean difference (MD) was calculated.

Language restriction English language only.

Country(ies) involved Taiwan.

Other relevant information n/a

Keywords Meta-analysis, Visual Outcomes, Retina, Retinal Artery, Central.

Dissemination plans n/a.

Contributions of each author

Author 1 - Bing-Qi Wu.

Author 2 - Hou-Ting Kuo.

Author 3 - Alan Hsu.

Email: alanhsu1221@gmail.com

Author 4 - Ning-Yi Hsia.

Author 5 - Chun-Chi Chiang.

Author 6 - Chun-Ju Lin.

Author 7 - Chun-Ting Lai.

Author 8 - Huan-Sheng Chen.

Author 9 - Yi-Yu Tsai.