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Efficacy and Clinical Outcomes of Suprachoroidal Triamcinolone Acetonide in Diabetic Macular Edema Patients: A Systematic Review and Meta-Analysis

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INTRODUCTION

Diabetic Macular Edema (DME) poses a significant challenge in ophthalmology due to its prevalence and potential for vision loss. Among the treatment modalities, Suprachoroidal Triamcinolone Acetonide (SCTA) has emerged as a promising intervention. However, a comprehensive synthesis of existing evidence regarding its efficacy remains elusive. This systematic review and meta-analysis aims to fill this gap by providing a rigorous evaluation of SCTA's efficacy in managing DME, thereby paving the way for informed clinical decision-making.

AIM

To evaluate the efficacy of SCTA in patients with DME.

METHOD

- Systematic Review and Meta-Analysis: Conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure methodological rigor and transparency.
- Comprehensive Data Search: A thorough search of electronic databases was performed to identify relevant studies for inclusion in the analysis, ensuring a comprehensive coverage of available literature.
- Data Pooling and Analysis: Data from selected studies were meticulously pooled to facilitate a robust analysis, allowing for the synthesis of findings across multiple studies.
- Primary Outcomes Measurement: Central Macular Thickness (CMT) and Central Subfield Thickness (CST) were measured at baseline, Month 1, and Month 3 to track changes over time and assess treatment efficacy.
- Secondary Outcomes Assessment: Best Corrected Visual Acuity (BCVA) and Intraocular Pressure (IOP) were assessed at the same time points to provide a holistic evaluation of treatment outcomes beyond structural changes.
- Statistical Analysis: The random-effects model was utilized to calculate pooled mean values along with 95% confidence intervals (CIs), ensuring a robust and reliable statistical approach to data synthesis and interpretation.

RESULTS

- Eleven studies were included, comprising a total sample size of 411 eyes.
- In patients with DME receiving SCTA, CMT significantly improved over the study period (Figure 1).
  - Baseline: Pooled mean CMT was 543.989 µm (95% CI: 330.275 – 757.704, P = 0.000)
  - Month 1: Pooled mean CMT was 288.661 µm (95% CI: 253.939 – 323.384, P = 0.000)
  - Month 3: Pooled mean CMT was 311.523 µm (95% CI: 234.936 – 388.111, P = 0.000)
- CST also showed a significant reduction (Figure 2):
  - Baseline mean: 563.905 µm (95% CI: 455.534 – 672.275, P = 0.000)
  - Month 1 mean: 310.841 µm (95% CI: 298.378 – 323.304, P = 0.000)
  - Month 3 mean: 319.568 µm (95% CI: 292.480 – 346.655, P = 0.000)
- BCVA consistently improved across time points (Figure 3):
  - Baseline: 0.774 (P = 0.000)
  - Month 1: 0.540 (P = 0.000)
  - Month 3: 0.521 (P = 0.000)
- Intraocular Pressure (IOP) exhibited a significant reduction:
  - Baseline: 13.575 mmHg (P = 0.000)
  - Month 1: 13.946 mmHg (P = 0.000)
  - Month 3: 13.726 mmHg (P = 0.000)

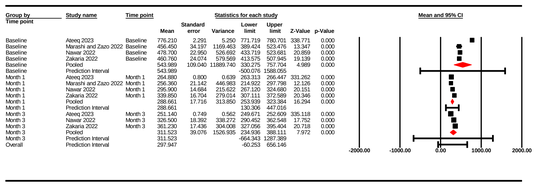


Figure 1: Forest plot of the pooled estimate of the mean of Central Macular Thickness (CMT) in Diabetic Macular Edema (DME) Patients Receiving Suprachoroidal Triamcinolone Acetonide (SCTA).

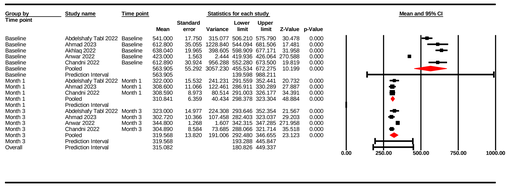


Figure 2: Forest plot of the pooled estimate of the mean of Central subfield thickness (CST) in Diabetic Macular Edema (DME) Patients Receiving Suprachoroidal Triamcinolone Acetonide (SCTA).

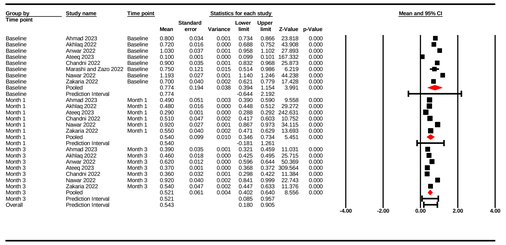


Figure 3: Forest plot of the pooled estimate of the mean of Best Corrected Visual Acuity (BCVA) in Diabetic Macular Edema (DME) Patients Receiving Suprachoroidal Triamcinolone Acetonide (SCTA).

CONCLUSION

Suprachoroidal Triamcinolone Acetonide intervention in DME patients demonstrated significant improvements in primary outcomes, including CMT and CST, as well as secondary outcomes like BCVA and IOP. These findings suggest that SCTA is an effective treatment option for DME patients, offering favorable clinical outcomes in terms of both structural and visual parameters.

REFERENCES

CONTACT INFORMATION