

INTRODUCTION

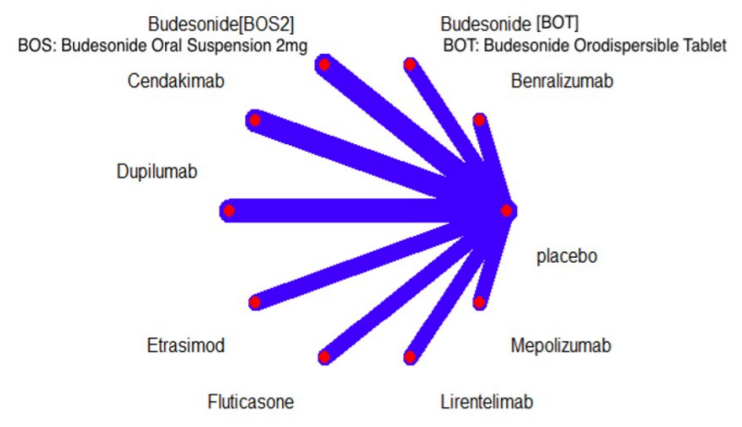
Eosinophilic Esophagitis (EoE) has transitioned from a rare condition to one with increasing incidence over the past two decades, likely due to heightened awareness and a rise in allergic disorders. With recent approvals of various biological and steroid treatments.

AIM

This study aims to identify the most effective treatment options for EoE.

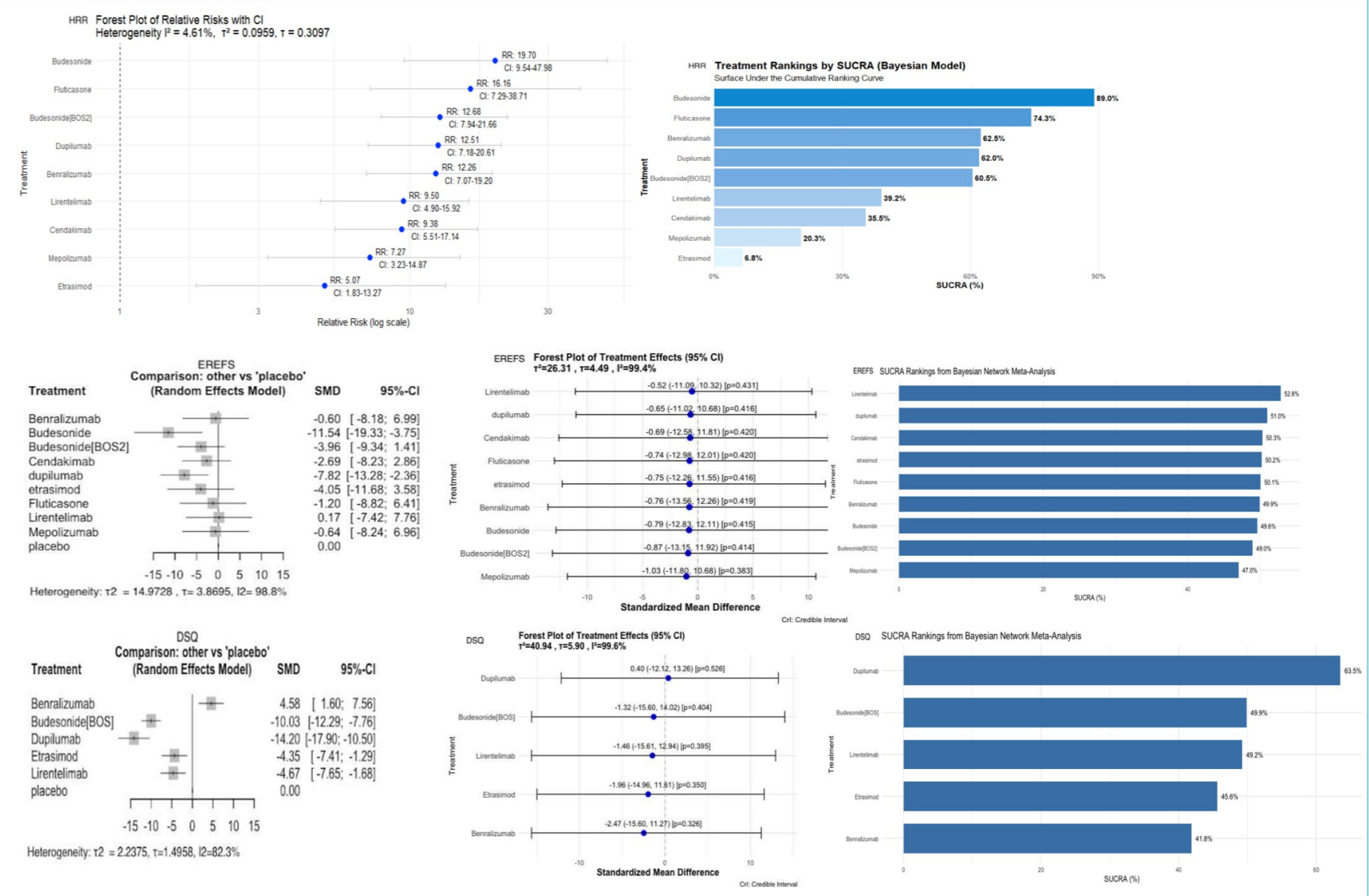
METHOD

We conducted a comprehensive literature search across PubMed, Cochrane, Scopus, Google Scholar, and ClinicalTrials.gov up to November 20, 2024. The primary outcomes assessed were Histological Response Rate (HRR) defined as <15 eosinophils per high power field (hpf), Endoscopic Reference Score (EREFS), and Dysphagia Symptom Questionnaire (DSQ). A network meta-analysis of nine treatment options was performed with Bayesian statistics, and results were reported as Surface Under the Cumulative Ranking (SUCRA) values. Higher SUCRA values indicate greater probability of being the best treatment. Statistical analysis was performed on R.



RESULTS

A total of 12 RCTs comprising 1,692 patients (995 in the treatment group; mean age 33.92 ± 4.34 years; 50% male; and 697 in the placebo group; mean age 33.88 ± 12.64 years; 55% male) over a mean duration of 16 weeks. All treatments exhibited statistically significant improvements in HRR (I : 4.61%, T :0.0959), with Budesonide orodispersible tablets (BOT) showing the highest relative risk (RR: 19.70; Confidence Interval [CI]: 9.54 to 45.98; p < 0.001). Initial network meta-analysis indicated the most significant improvements in EREFS with BOT (SMD: -11.54; CI: -19.33 to -3.75; p = 0.0037) and Dupilumab (SMD: -7.82; CI: -13.28 to -2.86; p < 0.005). However, Bayesian analysis revealed no significantly superior treatment with high heterogeneity among treatments (I : 99.4%, T : 26.31), and the highest SUCRA value for Lirentelimab at 52.8%. Dupilumab showed the highest effect on DSQ (SMD: -14.20; CI: -17.90 to -10.50; p < 0.0001), followed by Budesonide oral suspension (BOS) (SMD: -10.03; CI: -12.29 to -7.76; p < 0.0001), although all treatments were nonsignificant in Bayesian analysis (I : 99.6%, T : 40.94%) with Dupilumab achieving the highest SUCRA of 63.5%.



Figures: The above illustrations show the forest plots and SUCRA rankings from the Bayesian network meta-analysis for HRR, EREFS, and DSQ outcomes.

CONCLUSIONS

The HRR results demonstrated low heterogeneity and favorable outcomes with BOT. While EREFS results favoring BOT and DSQ results indicate Dupilumab could guide clinical decision-making, the high heterogeneity and the absence of a definitive best treatment option on Bayesian analysis require cautious interpretation of these findings. Further long-term RCTs are necessary to establish more precise treatment efficacy.

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