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Safety and Efficacy of Belimumab in Patients with Lupus Nephritis: A Systematic Review and Meta-Analysis

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Objectives : Belimumab is a recombinant, human IgG1 λ monoclonal antibody that binds to the soluble B-lymphocyte stimulator protein, and it is approved globally for the treatment of patients with active autoantibody-positive systemic lupus erythematosus (SLE) receiving standard therapy. We aimed to evaluate the role of Belimumab in the maintenance phase of treatment for lupus nephritis (LN).

Methods : Four potential articles from PubMed and ScienceDirect were identified through December 2023. Randomized trial and propensity-score matched (PSM) cohort studies comparing renal response and safety outcomes between Belimumab and placebo in LN patients were included. The risk of bias was assessed using Cochrane RoB 2.0 for randomized trials and ROBINS-I for cohort studies. The pooled effect was measured by the random-effect model and shown in risk ratio (RR) and the corresponding 95% confidence interval (CI).

Results : The quantitative analysis of three randomized controlled trials revealed that treatment with belimumab resulted in 1.54 times higher odds of primary efficacy renal response and 1.73 times higher odds of complete renal response compared to standard treatment in patients with lupus nephritis. There was no significant difference between the two groups in terms of treatment-related adverse events, serious adverse events, and infections.

Conclusions : Belimumab in combination with standard treatment is efficacious in achieving beneficial renal response without increasing the odds of adverse effects compared to standard treatment alone in patients with lupus nephritis.

Figure 1. PRISMA flow diagram depicting study selection and screening process for the systematic review and meta-analysis..png

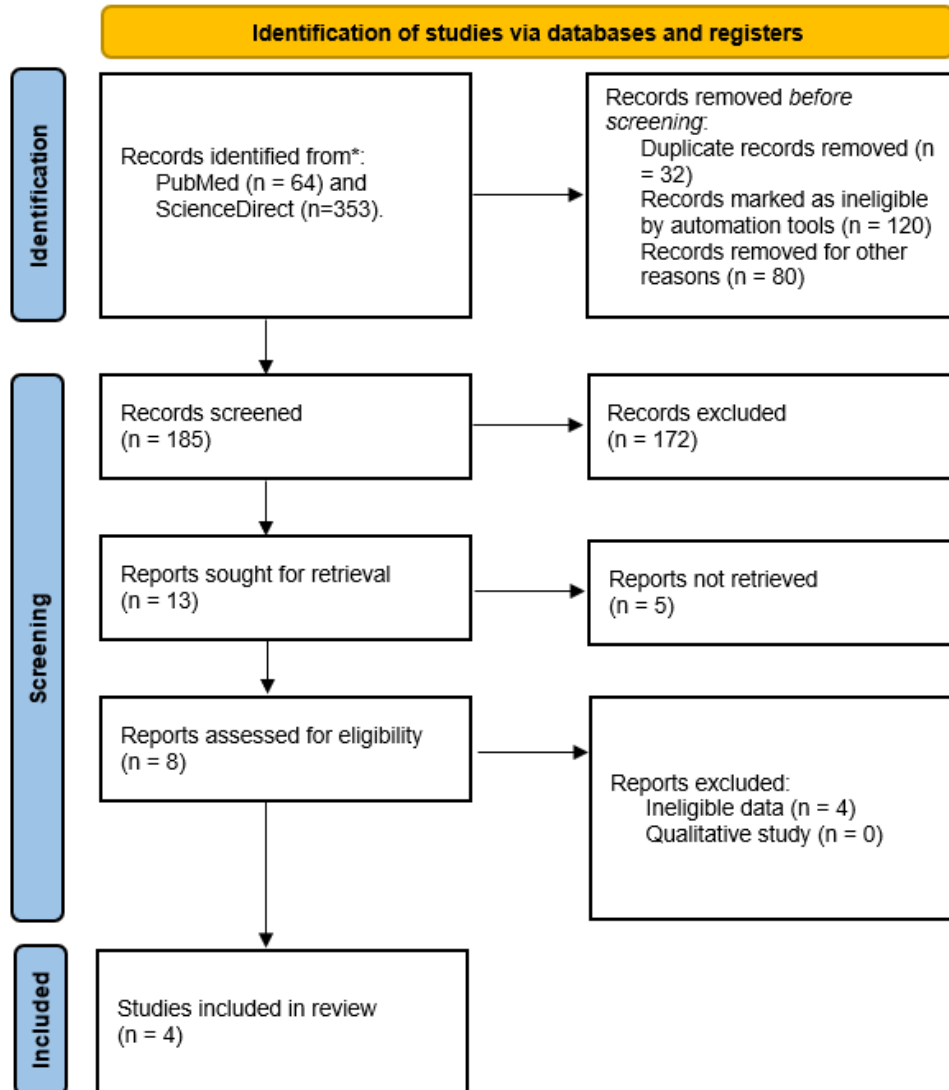


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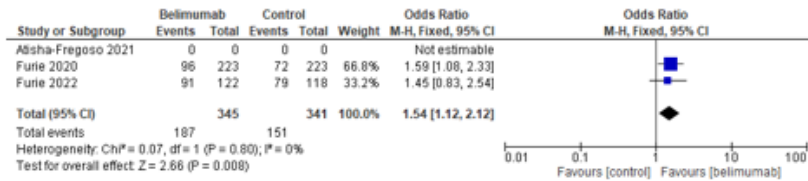


Figure 3. Primary Efficacy Renal Response Pooled Effect

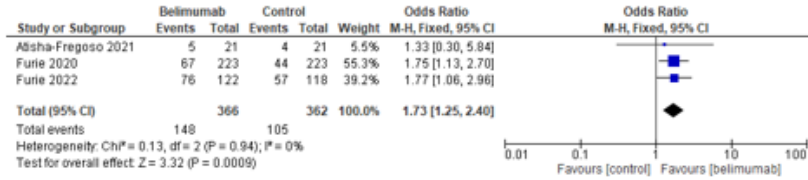


Figure 4. Complete Renal Response Pooled Effect

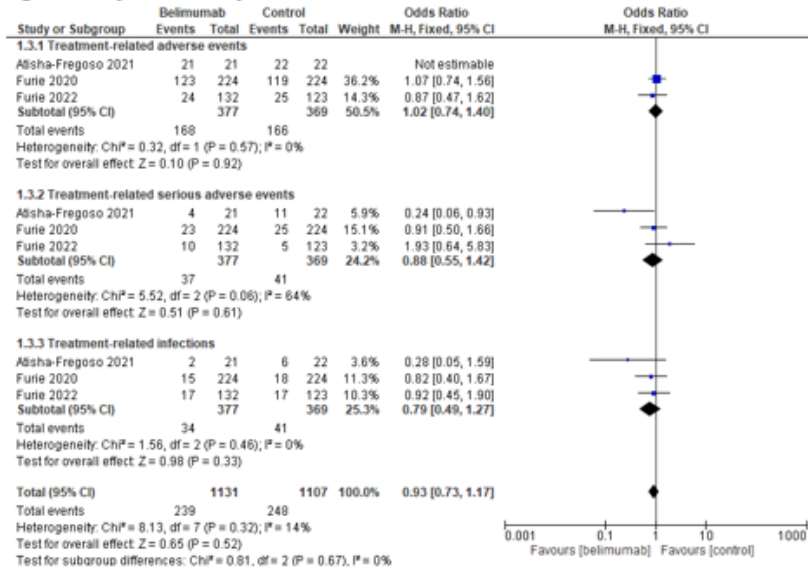


Figure 5. Safety Outcomes Pooled Effect