Systematic Review With Indirect Comparison of Efficacy and Safety of Dupilumab Versus Omalizumab for Severe Asthma With Allergic Phenotype

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INTRODUCTION

Severe asthma is a condition with a significant impact on quality of life and morbidity[1]. Currently, omalizumab is the only immunobiological agent covered by the Brazilian public health system for severe allergic asthma treatment[2].

OBJECTIVE

This study aims to compare the efficacy and safety of dupilumab, an IL-4/IL-13 signaling inhibitor, with omalizumab, an anti-IgE monoclonal antibody, in patients with severe allergic asthma to support coverage decisions.

METHODS

We searched Medline/Pubmed, EMBASE and Cochrane Central for double-blind randomized trials evaluating dupilumab or omalizumab as add-on therapy to long-acting beta2-agonists (LABA) and inhaled corticosteroids on patients with severe allergic asthma (defined as total IgE ≥30 IU/mL and sensitivity to ≥ 1 perennial allergens).

Outcomes:

- Exacerbation rate;
- Forced expiratory volume in 1 second (FEV-1);
- Adverse events (AE) leading to treatment discontinuation.

Meta-analysis for direct and indirect comparisons was performed using a frequentist approach (netmeta package in R Software), using random-effects model to account for heterogeneity. Risk of bias was assessed with RoB2. Certainty of evidence (CoE) was rated using GRADE framework for network meta-analysis.

RESULTS

We identified four studies assessing dupilumab and eight studies assessing omalizumab. To ensure proper comparability and minimize intransitivity, we included only studies with adequate blinding and using as co-interventions inhaled corticosteroids in combination with LABA[3-18].

RESULTS

Dupilumab reduces the exacerbation rate (Figure 1), and increases the FEV-1 compared to omalizumab (Figure 2). No statistical difference was observed in AE leading to treatment discontinuation (Figure 3). Dupilumab have a higher P-score for exacerbation rate and FEV-1 improvement, suggesting it is more effective in reducing exacerbations and improving lung function compared to omalizumab (Figure 4).

Figure 1: Network metanalysis estimates of interventions on asthma exacerbation rate in severe allergic asthma patients.

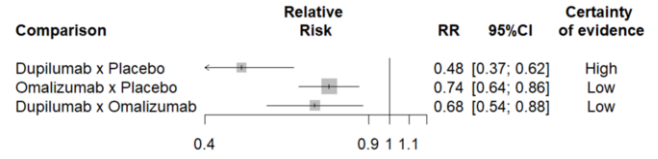


Figure 2: Network metanalysis estimates of interventions on FEV-1 in severe allergic asthma patients.

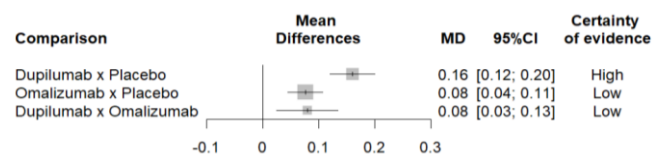


Figure 3: Network metanalysis estimates of interventions on adverse events leading to treatment discontinuation.

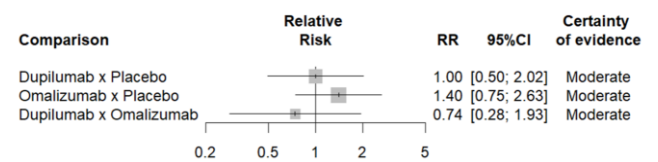
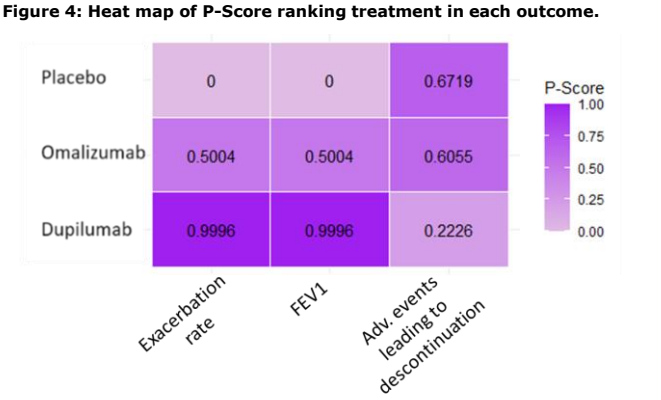


Figure 4: Heat map of P-Score ranking treatment in each outcome.



CONCLUSIONS

In this indirect comparison, dupilumab was associated with lower exacerbation rates and greater improvements in lung function in patients with severe allergic asthma.

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