From Exacerbations to Expectations: The Dupixent Breakthrough in COPD

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Educational background

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Chronic obstructive pulmonary disease (COPD) remains a leading global cause of morbidity and mortality, with acute exacerbations accelerating lung-function decline, impairing quality of life, and increasing the risk of death. Despite advances in inhaled triple therapy, many patients continue to experience frequent exacerbations and disease progression. This persistent unmet need has driven interest in biologic therapies that target key inflammatory pathways. Dupilumab, a fully human monoclonal antibody blocking the interleukin-4 and interleukin-13 receptor pathway, has emerged as the first biologic to demonstrate consistent clinical benefit in COPD. In the pivotal phase 3 trials, dupilumab reduced exacerbation and improved lung function. Importantly, patients reported better respiratory symptom control and quality of life. Subgroup analyses confirmed similar benefits in patients with and without emphysema, and pooled analyses reinforced the robustness of these findings, with an incidence rate ratio of 0.69 and a safety profile comparable to placebo.

Biomarker studies further revealed that elevated blood eosinophils and fractional exhaled nitric oxide (FeNO) predicted greater treatment response, underscoring the value of a biomarker-guided, precision-medicine approach. Beyond trial outcomes, a U.S. population-based cohort showed that dupilumab use was associated with reduced all-cause mortality, fewer hospital visits, and decreased incidence of COPD-related comorbidities such as pneumonia and new-onset heart failure.

Taken together, these data establish dupilumab as a transformative therapy for COPD with T2 inflammation—reducing exacerbation burden, improving lung function and symptoms, and showing potential long-term survival benefit. Dupilumab represents a paradigm shift in COPD care, moving "from exacerbations to expectations," and marks the beginning of a new era of biomarker-driven, disease-modifying treatment strategies.