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Anti-interleukin Biologics for the Treatment of the Atopic March

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The atopic march refers to the natural historical sequence of allergic disorders as they develop from infancy, and childhood. Classically, the atopic march begins with atopic dermatitis, followed by IgE-mediated food allergy, progressing to asthma, allergic rhinitis, and finally to the fifth member eosinophilic esophagitis. The pathogenesis of the atopic march is complex, and involves genetic, immunological, and environmental factors. T helper type 2 (Th2) lymphocytes, and epithelial cells play a very important role in the pathogenesis of diseases in the atopic march crusade. Th2 cells secrete cytokines, such as interleukin-5 (IL-5), IL-4, and IL-13, whereas, epithelial cell injury release alarmin cytokines, including IL-25, IL-33, and thymic stromal lymphopoietin (TSLP). These cytokines and other molecules, such as filaggrin, and chemokines play a key role in cutaneous eczematous lesions, airway inflammation and remodeling, and oesophageal mucosal inflammation. Treatment of eosinophilic asthma and associated comorbid disorders is challenging, and requires a novel universal approach, such as targeting the instigating interleukins with biologics. Dupilumab is a fully humanized IgG4 monoclonal antibody to the IL-4R α , which mediate signaling to both IL-4 and IL-13, and blocks their immunopathological effects. Dupilumab is the only biologic that has been approved by the Food and Drug Administration for the treatment of eosinophilic asthma, atopic dermatitis, and eosinophilic esophagitis. In patients with eosinophilic asthma treatment with dupilumab has been shown to improve asthma control, reduce exacerbations, and improve lung function. In patients with chronic rhinosinusitis with nasal polyps, dupilumab concomitantly, significantly improves nasal polyps score, patient-reported nasal congestion score, Lund-Mackay computed tomography score, and the sino-nasal outcome test-22 score. Dupilumab also significantly improves symptoms of eczema, such as the Eczema Area and Severity Index score, Scoring Atopic Dermatitis score, and the Peak Pruritus Numerical Rating Scale (NRS). Tezepelumab (anti-TSLP) is approved for the treatment of eosinophilic asthma, and has been shown to significantly reduce exacerbations, hospitalization, and improve lung function, asthma control and patient HLQoL. It is in phase II clinical trials for the treatment of atopic dermatitis, and it might meet the endpoint.

Biography

Nightingale Syabbalo is a Pulmonologist, and Clinical Respiratory Physiologist by training, and obtained his postgraduate training at St. George's Hospital Medical School, University of London, UK. He has worked as an academician, Consultant Physician, and a Clinical Researcher in several countries, including Canada, Kuwait, Oman, South Africa, and Zambia. He has published extensively in high impact medical journals, and is an Editorial Board member of seven journals in Pulmonology and Respiratory Research; and a reviewer of four journals in Thoracic Medicine, Respiratory Research, and Clinical Medicine. Prof. Syabbalo's current area of research centers on the role of interleukins in the pathophysiology and treatment of severe asthma.

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