LETTER TO THE EDITOR

Cycling biologic therapy for severe asthma

To the editor

Systemic steroids in patients with asthma can induce various complications such as infection, diabetes, and osteoporosis, and increase healthcare resource utilization. Biologics are a corticosteroid-sparing strategy, and recently, “super-responders” i.e., patients who show excellent response to biologics, which results in complete cessation of exacerbations and permits discontinuation of systemic steroids, have gained attention. This report describes a patient with severe asthma who became a super-responder to cycling biologic therapy using 2 biologics with mepolizumab and dupilumab.

We describe the case of a 47-year-old man who had childhood asthma. The patient had a relevant history of smoke exposure (44 pack-years) and experienced respiratory symptoms for the first time in adult age (42 years old). Nasal polypl surgery was performed at the age of 45 years. Although he was treated with fluticasone furoate 200 μg/vilanterol 25 μg once daily and montelukast 10 mg once daily, he continued to have recurrent asthma exacerbations, requiring the use of systemic corticosteroids. He was then referred to the Department of Airway Medicine of Mitsubishi Kyoto Hospital. He was aspirin tolerant. His body mass index was 33.0 kg/m². He suffered from paroxysmal nocturnal dyspnea and exacerbations of respiratory symptoms at night and in the morning. Chest radiography did not reveal lung hyperinflation. His blood eosinophil counts were 5.9% (535.7/μL), and fractional exhaled nitric oxide (FeNO) level was 46 ppb. His total immunoglobulin E (IgE) level was 2531-0437/© 2021 Sociedade Portuguesa de Pneumologia. Published by Elsevier España, S.L.U. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).

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or hospital admissions, and showed no decrease in ACT scores or elevation in eosinophil count. Additionally, no adverse effects occurred.

As proposed by Zervas E, et al., although omalizumab and dupilumab can be prescribed to patients with predominantly allergic asthma, mepolizumab, benralizumab, reslizumab, and dupilumab may be more suitable in those with eosinophilic asthma. Thus, in asthmatic patients with both allergic and eosinophilic features in whom single biologic therapy cannot control symptoms, dual or cycling biologic therapy, using a combination of omalizumab or dupilumab with mepolizumab, benralizumab, reslizumab, or dupilumab can be prescribed to concomitantly control both features. Our patient presented with eosinophilic features such as elevated eosinophil counts (>300/\mu l), FeNO (>50 ppb), and chronic rhinosinusitis with nasal polyps, along with allergic features such as early onset, high total IgE levels (>100 IU/mL), and also tested positive for Japanese cedar-specific IgE, implying that his asthma had both allergic and eosinophilic features. Thus, dual and cycling biologic therapy, in addition to single biologic therapy, rendered the patient a “super-responder” to cycling therapy with dupilumab and mepolizumab as he did not experience loss of asthma control or any exacerbations that required systemic steroids, emergency department visits, or hospital admissions.

The cost associated with cycling biologic therapy is similar to that of single biologic therapy, whereas dual biologic therapy is very expensive. On the other hand, in cycling biologic therapy, it is not known if the effects of the biologic persist even when it is not administered. Additionally, effects of the interaction of biologics are unknown in dual or cycling biologic therapy. Therefore, large randomized studies are needed to confirm the efficacy and safety of dual and cycling biologic therapy in managing severe asthma in patients who are unresponsive to single biologic therapy and to identify subgroups that are likely to benefit from these biologic therapies.

Authorship

SH, EO, and HY wrote the manuscript. SH and HY followed the patient. SH, EO, and HY read and approved the final manuscript.

Declaration of Competing Interest

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References


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