

LETTER TO THE EDITOR

Successful preoperative intervention of dupilumab in high-risk surgery in a patient with severe atopic dermatitis

Dear Editor,

Patients with atopic dermatitis (AD) have an increased risk of developing cutaneous bacterial infection, and there may be abnormal colonization of Gram-positive bacteria, including *Staphylococcus aureus*, on the lesional skin. Thus, management of AD skin condition is mandatory before surgery. Dupilumab is a fully human monoclonal antibody that inhibits signaling of the T-helper 2 cytokines interleukin (IL)-4 and IL-13 by targeting the IL-4 receptor alpha subunit.¹ Here, we report an AD patient who was successfully treated with dupilumab in advance of an operation for osteoarthritis and postoperatively.

A 51-year-old woman with severe AD had congenital dysplasia of the right hip joint, which had caused progressive

secondary osteoarthritis. Although she requested an orthopedic surgery of total hip replacement, the surgeons hesitated to operate because of the considerable risk of infection at the AD-affected surgical site. Thus, she was recommended to receive an intensive treatment of AD prior to the surgery. She was referred to us with severe erythroderma and lichenified eczematous plaques of AD (Fig. 1, 0 months; Eczema Area and Severity Index [EASI], 64.8). The diagnosis of AD was confirmed by skin biopsy findings. Initial treatment with a combination of standard topical therapy and narrowband ultraviolet B (NB-UVB) for 6 months slightly improved AD (Fig. 1, 6th month; EASI, 55). To treat AD more effectively, NB-UVB was discontinued and dupilumab was introduced according to the standard

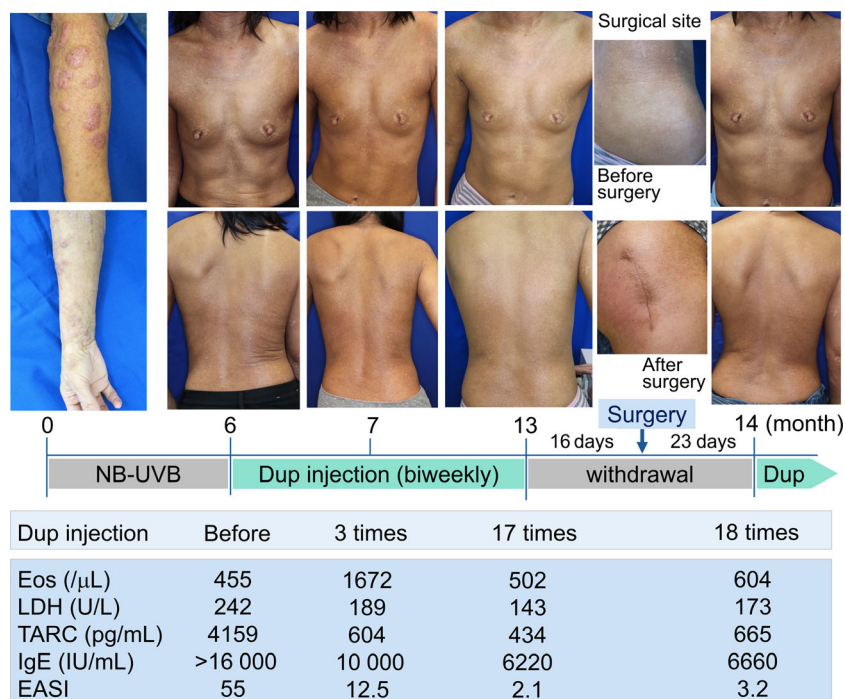


Figure 1. Chronological changes of clinical features and blood examinations. Clinical and laboratory data at baseline and at 6th, 7th, 13th and 14th month after initial visit. Dupilumab (Dup) was initiated at 6 months after the standard topical and narrowband ultraviolet B (NB-UVB) therapies. Eczema Area and Severity Index (EASI) score (range, 0–72), serum level of lactate dehydrogenase (LDH; normal, 115–245 U/L), serum level of thymus and activation-regulated chemokine (TARC; normal, 0–450 pg/mL) and serum level of immunoglobulin E (IgE; normal, 0–170 IU/mL) were decreased after initiation of dupilumab treatment, while the number of circulating eosinophils (Eos; normal, 70–440/μL) was increased. Dupilumab was discontinued 16 days before the surgery and restarted 23 days after. Images of the surgical site 16 days before the surgery and 23 days after are shown.

treatment regimen. She responded well to dupilumab and her EASI score had decreased to 12.5 (Fig. 1, 7th month) after 6 weeks. The orthopedic surgeon decided to perform total hip replacement when her EASI score had decreased to 2.1 after 6 months of dupilumab treatment (Fig. 1, 13th month). The final injection prior to the surgery was administrated 16 days before. There was neither perioperative infection nor wound problems. Dupilumab was restarted 23 days after the surgery when her EASI had slightly increased to 3.2 (Fig. 1, 14th month).

Total hip replacement is one of the highest risk surgeries for surgical site infection and always carried out in a clean aseptic operating room. It was reported that excess production of IL-4 in the skin caused aberrant wound healing in an animal model of AD.² It was noted that dupilumab administration is associated with fewer skin infections than placebo.³ This raises the possibility that preoperative treatment with dupilumab reduces the perioperative risk of surgical site infection and promotes wound healing in severe AD patients. However, very limited information is available concerning the dupilumab management before and after high-risk surgery. In the clinical trials of dupilumab, patients in whom major surgical procedures were planned or anticipated have been excluded. Nakanishi *et al.*⁴ reported the effectiveness of perioperative treatment of severe AD with dupilumab upon preparation for cardiac surgery. According to guidelines for treatment of psoriasis, it is recommended to discontinue biologic therapy 3–5 times the half-life of the drug before surgery.⁵ Our case suggests that dupilumab

is a good choice for patients with a high surgical burden, but further studies would be necessary to conclude the safety and efficacy of perioperative use of dupilumab.

CONFLICT OF INTEREST: None declared.

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