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CORRESPONDENCE

# Refractory Kimura's disease accompanied with prurigo responding to dupilumab administration: A case report

Kimura's disease is a disorder characterized by the formation of progressive masses in the soft tissues of the face, accompanied by an increase in peripheral eosinophil counts and serum total IgE levels. The etiology and pathogenesis of Kimura's disease are unknown. The condition is thought to involve a Th2-type immune response because it is frequently associated with allergic diseases, along with increased production of interleukin (IL)-4, IL-5, and IL-13 by peripheral blood mononuclear cells.[1] Patients with Kimura's disease sometimes have prurigo as a comorbidity,[2] and the symptoms of both are often refractory. Here, we report a case of Kimura's disease complicated by prurigo, in which dupilumab was effective for both.

A 55-year-old female complained of post-auricular itchy swellings, and itchy nodules on her limbs and trunk, which had persisted for 14 and 10 years, respectively. She had a history of atopic dermatitis and bronchial asthma. The post-auricular swelling and body nodules were refractory to treatment with topical steroids and oral anti-histamines. Initial examination revealed dark purple, walnut-sized subcutaneous masses on the bilateral posterior auricles

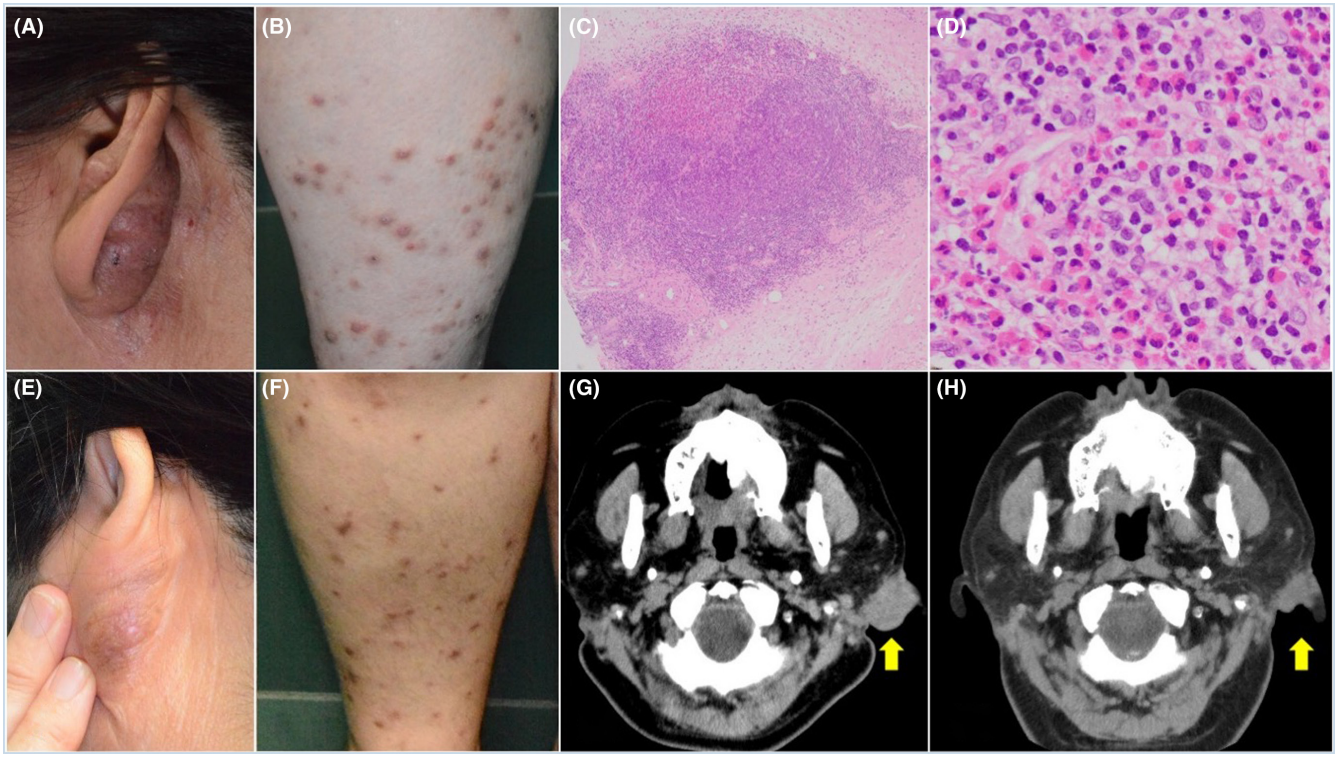


FIGURE 1 Clinical manifestations at the time of the patient's first visit (A, B). Dark purple subcutaneous masses (A) were observed on the posterior of both auricles. Numerous fingertip-sized nodules (B) were observed on the extremities and trunk. Histological findings of the tumor (hematoxylin and eosin staining, (C) 40× and (D) 400×) showed lymph follicle formation and infiltration of the dermis by eosinophils and plasma cells. At 11 months after the start of dupilumab treatment, the bilateral post-auricular masses had flattened out (E). The nodules on the extremities and trunk flattened out, leaving pigmentated areas (F). Comparison of head CT images taken before (G) and 6 months after (H) dupilumab treatment reveal a marked reduction in nodule size (arrow).

(Figure 1A), and multiple fingertip-sized elastic hard nodules on the limbs and trunk (Figure 1B). Blood tests revealed an increased eosinophil count ($2.64\times10^3/\mu L$) and increased serum IgE levels (8861.0 IU/mL: <358), but normal serum TARC levels (235 pg/mL: <450). A skin biopsy from the post-auricular region showed lymphoid follicle formation and infiltration of the dermis by eosinophils and plasma cells (Figure 1C,D). A skin biopsy of an itchy nodule on the right forearm revealed findings consistent with prurigo. Based on the above, she was diagnosed with Kimura's disease complicated by prurigo. Three weeks of oral cyclosporine monotherapy (200 mg/day) failed to ameliorate Kimura's disease or prurigo. Subsequent combination therapies with prednisolone (PSL; 20 mg/day) and cyclosporine, and PSL plus PUVA-bath, also failed. Finally, as her skin phenotype fulfilled the diagnostic criteria for atopic dermatitis, she was given dupilumab (initial dose of 600 mg, followed by 300 mg every 2 weeks) concomitant with oral prednisolone. Both the post-auricular subcutaneous masses and the prurigo improved markedly, and the nodules almost flattened out after 11 months of administration (Figure 1E,F). Computed tomography also revealed an improvement in Kimura's disease (Figure 1G,H). The eosinophil count and serum IgE and TARC level decreased to 300/μL, 3354.6 IU/dL and 131 pg/mL, respectively. A year after starting dupilumab, the dose of PSL was reduced to 5 mg/day without recurrence of either disease.

Treatment of Kimura's disease generally includes oral steroids, immunosuppressive agents, surgical resection, and local low-dose radiotherapy;[2] however, adverse events can result in treatment discontinuation. In recent years, biologics such as dupilumab,[3–5] omalizumab, an anti-IgE antibody,[6] and mepolizumab, an anti-IL-5 antibody[7–9] have been used successfully to treat Kimura's disease. As Kimura's disease is involved in Th2 immune response,[1] blocking Th2 signaling with dupilumab may suppress its activity. In addition, dupilumab is effective against prurigo nodularis,[10] which is also shown in our case. Thus, dupilumab should be a treatment option for Kimura's disease with prurigo that is resistant to conventional treatments.

## CONFLICT OF INTEREST STATEMENT

Yuta Koike received lecture fees from Sanofi. Hiroyuki Murota received lecture fees from Sanofi.

## DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

## ETHICS STATEMENT

Approval of the research protocol: N/A. This report is a single case report.

Informed Consent: We obtained a written informed consent from the patient.

Registry and the Registration No. of the study/trial: N/A.

Animal Studies: N/A.

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