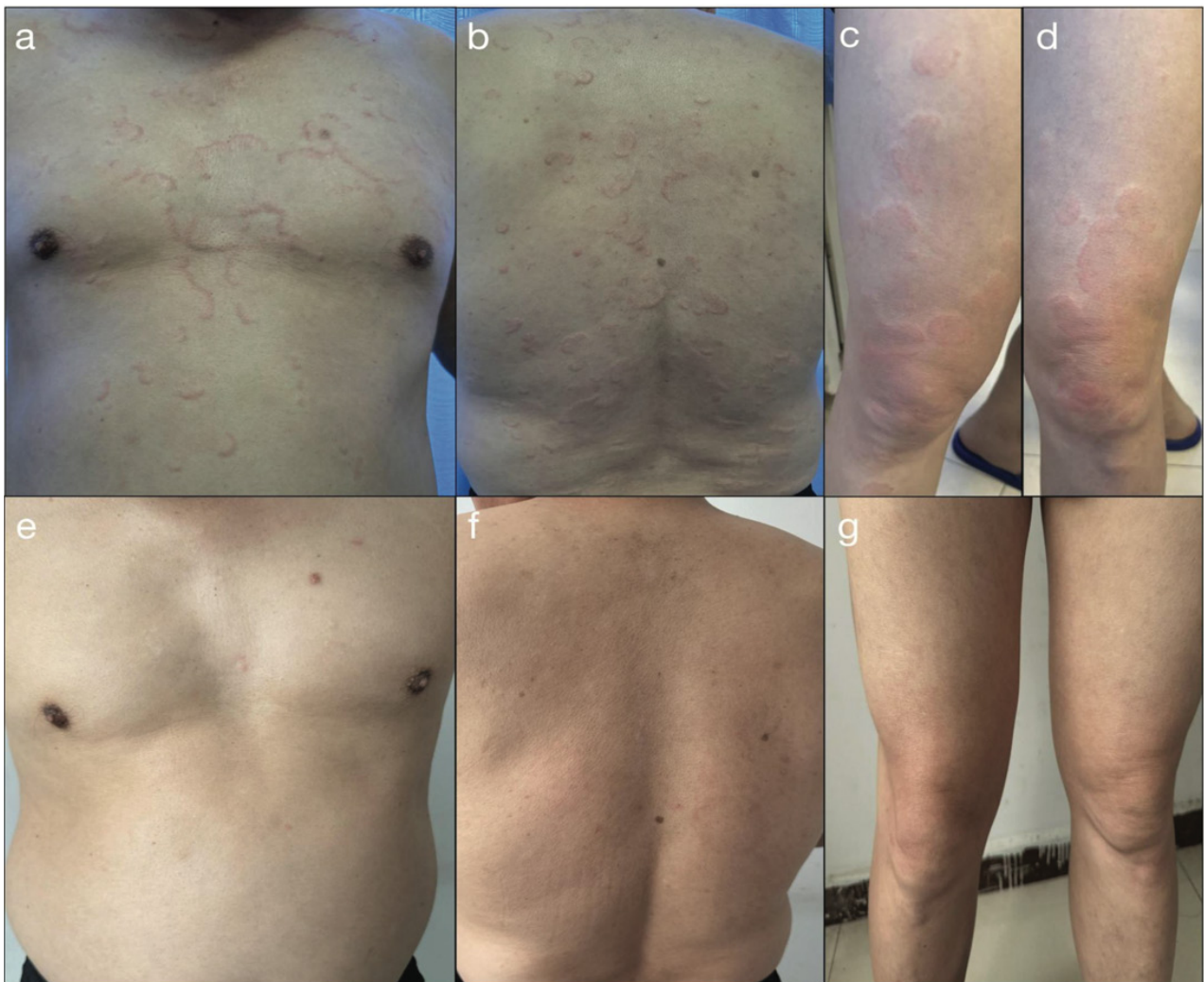


# **Successful treatment with upadacitinib in a patient with intractable urticarial vasculitis: a case report**

Sirs,  
Urticarial vasculitis (UV) is characterised by long-lasting urticarial rashes (>24 hrs) and histopathologic findings of leukocytoclastic vasculitis. The incidence of UV has been reported to be not high (1). However, the appearance of UV patients in clinical in China is not rare due to the huge population base. Moreover, there still has been not a guideline of UV treatment published by academies available for clinical doctor until now. Most of the drugs applied in UV treatment available for patients have a low rate of response (2-4). The drug with a satisfied efficacy and simultaneously with a high response rate is required for the UV patients in clinical. Here, we present a case of satisfactory efficacy of UV treated with upadacitinib, which has not been previously reported in the literature.

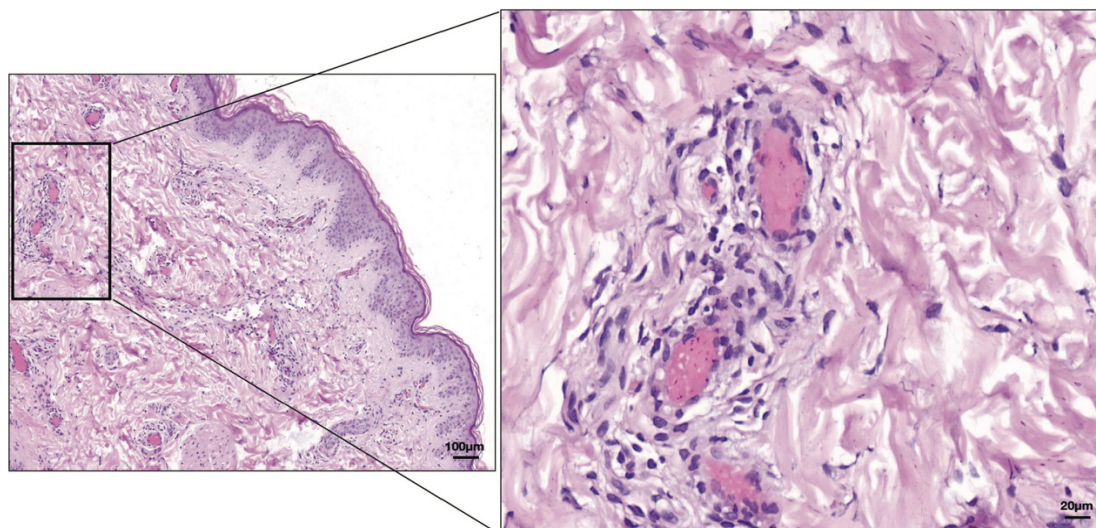
A 50-year-old man presented to the dermatological department with a long-lasting pruritic and painful wheal-like rashes all over (Fig. 1a-d). The episodes of rash cause him red eyes. But he had no symptoms of dyspnea and palpitations. The patient had no medication history in a week before the rashes appeared. He told us that wheal-like rash flared repeatedly after his toothache. His temperature was 36.2°C, heart rate is 90 beats/min, respiratory rate was 20 breaths/min, and blood pressure is 121/81mmHg. The laboratory investigations results showed a white blood cell number (WBC) of 11.9 (normal 3.5-9.5)  $10^9/L$ , a neutrophils absolute value (NEUT#) of 7.43 (normal 1.8-6.3)  $10^9/L$ , a lymphocyte absolute value of 3.26 (normal 1.1-3.2)  $10^9/L$ , a serum IL-6 level of 9.08 (normal  $\leq 7$ ) pg/mL. However, serum levels of total IgA, total IgG, total IgM, total IgE, C3 and C4 were normal. The skin biopsy was consistent with urticarial vasculitis (Fig. 2); The patient was hospitalised and given the conventional treatment for 5 days including cetirizine hydrochloride,

loratadine, Vitamin C, calcium chloride and sodium thiosulfate. However, the therapeutic effect of the 5 days treatment was not satisfied. Although some of the original rashes had faded and left behind a light pigmentation after resolution, new wheal-like rash appear constantly in these days. The patient chose to use JAK inhibitor and refused treatment of glucocorticosteroids and other immunosuppressants considering the long-term course of UV and the subsequent side effects in chronic administration. After infectious screening (including test of HIV, HAV, HBV, HCV, TPPA and chest CT) for exclusion of active infection, upadacitinib was orally administrated with 15 mg once a day for the patient. After 3 days treatment, almost all the wheal-like rashes were faded away and simultaneously no large amounts of new rashes had appeared. Then, he stopped the conventional treatment and continued oral administration of upadacitinib. In next 2 weeks treatment, few scattered rashes were appeared occasionally on legs or palms which would fade away soon (Fig. 1e-g).



**Fig. 1.** Image of the rashes of the present patient.

**Fig. 2.** The image of skin biopsy (Haematoxylin and eosin staining, HE staining) of the rash in UV patient of present case: 100 × (left panels) and 400 × (right panels), scale bar = 100 μm and 20 μm.



UV patients are not rare in clinical in China because of the huge population, nevertheless, the low incidence of UV. However, the pathogenesis of UV has not been thoroughly deciphered. The conventional treatment including H1-antihistamines, Vitamin C, and calcium agents, is usually unsatisfied and exerts a poor efficacy for UV patients (2, 3). Although glucocorticoids have a high response rate for UV patient, it is often recurrent of the rash in the progression of dose decrement or discontinuation of glucocorticoids (3).

Janus kinase (JAK) signalling pathway is correlated with human diseases and modulates immune response. Upadacitinib, as an oral JAK1 and JAK2 selective inhibitor, has been reported to be applied in multiple diseases such as atopic dermatitis (AD) and psoriasis (5), even in alopecia areata and vitiligo (6, 7). However, the efficacy of upadacitinib in UV treatment is unknown and the report of upadacitinib in UV treatment is few. In present case, upadacitinib showed a satisfied therapeutic effect on this UV patient. Upadacitinib quickly controlled the symptoms of the patient in only few days after treatment and made the rashes even completely disappear. It implicates that JAK signalling pathway may be involved in UV and promote the progression of inflammatory response in UV. Upadacitinib could be a better choice for UV patients who do not respond to conventional treatment.

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