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LETTER TO THE EDITOR

The occurrence of varicella after zoster vaccination in a patient with rheumatoid arthritis receiving tofacitinib

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Tofacitinib is a Janus kinase (JAK) 1 and 3 inhibitor approved for the treatment of rheumatoid arthritis (RA).[1] JAK1 is associated with the receptors for interferons (IFNs) which are involved in the immunity against viral infections.[2,3] Tofacitinib modulates the varicella-zoster virus (VZV)-specific type I helper T cells' response to VZV by reducing IFN-γ production and the proliferation of specific T cells in a dose-dependent manner.[4,5] Common adverse events of tofacitinib include herpes zoster.[6] Zoster vaccine is one type of live-attenuated vaccines, of which the administration concurrent with the use of tofacitinib is suggested to be avoided.[7]

A 30-year-old female patient diagnosed with RA was administered with tofacitinib 5 mg twice daily. She did not have history of varicella at a young age. Due to personal reasons, she received a single dose of zoster vaccine without consultation with her rheumatologist. Two weeks after the vaccination, itchy vesicles and papules originated from the perioral region and around the vaccine injection site in the left deltoid region (Figure 1). Subsequently, the vesicles and papules rapidly extended to the forehead, cheeks and chin (Figure 2). Varicella in association with zoster vaccination was considered, so tofacitinib was discontinued. She was admitted to the isolation ward and given intravenous acyclovir 500 mg every 8 h. On hospital Day 1, the results of blood survey were as follows: white blood cell 7,180/μL (neutrophils 90.1%, lymphocytes 3.5%), hemoglobin 11.3 g/dL, platelet count 251,000/μL, aspartate aminotransferase 56 U/L, alanine aminotransferase

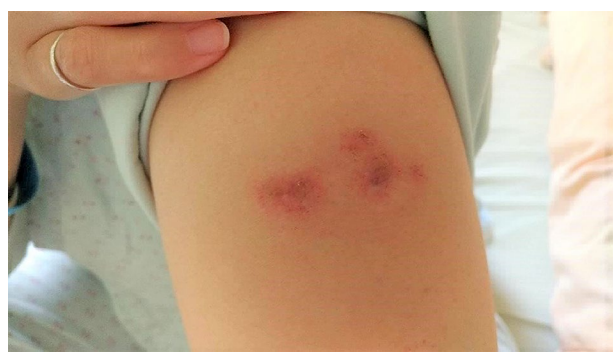

Figure 1. Several vesicles and papules occurred in a group around injection site of zoster vaccine in left deltoid region. Lesions had been crusted when photograph was taken.

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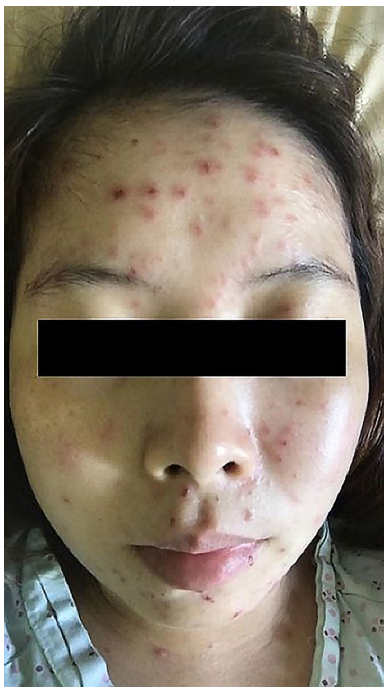

Figure 2. Multiple vesicles and papules occurred over forehead, cheeks, chin and neck. Some lesions had become crusted.

61 U/L, blood urea nitrogen 10 mg/dL, and creatinine 0.74 mg/dL. A serological survey revealed an elevation of VZV-immunoglobulin (Ig) M (ratio=3.887, reference positive ≥1.1) and VZV-IgG (ratio=6.366, reference positive ≥1.1) levels, along with normal herpes simplex virus (HSV)-I IgG and HSV-II IgG levels. During the first three days of hospitalization, the vesicles continued to extend to the skin covering the neck, upper chest and upper back, which was accompanied by a fever. The fever later subsided and the vesicles stopped their progression and began to become crusted during hospital Day 3. After a seven-day course of intravenous acyclovir therapy, the patient was allowed to be discharged from the isolation ward. No VZV reactivation was observed during the subsequent six-month outpatient department visits. A written informed consent was obtained from the patient.

To our knowledge, this is the first case in the English literature which demonstrates the risk of post-zoster vaccination varicella in a tofacitinib user. The 2019 European League Against Rheumatism recommendations stated that live-attenuated vaccines may be considered in patients with rheumatic diseases but they should be avoided during immunosuppression.[7] Zoster vaccination with caution in appropriately-selected patients with rheumatic diseases can be both immunogenic and safe.[8] For the purpose of safety, it is suggested that the zoster vaccine should be administered four weeks prior to the initiation of biologic or targeted synthetic disease-modifying antirheumatic drugs.[7] Our case has demonstrated an adverse event of zoster vaccination during tofacitinib treatment. The disease course of zoster vaccine-induced varicella seemed benign and the patient displayed a good response to intravenous acyclovir treatment.

Declaration of conflicting interests

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