CORRESPONDENCE

Imatinib Induced Complete Remission of Psoriasis in a Patient with Chronic Myeloid Leukemia

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Received: 23 June 2019 / Accepted: 19 July 2019 / Published online: 22 July 2019
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Dear editor,

Imatinib is a tyrosine-kinase inhibitor, approved for the treatment of chronic myeloid leukemia (CML), Philadelphia-positive acute lymphoblastic leukemia (Ph-ALL), gastrointestinal stromal tumors, dermatofibrosarcoma protuberans, certain hypereosinophilic syndromes with PDGFA, and PDGFRB mutations, and systemic mastocytosis, amongst others [1]. Imatinib-related cutaneous side effects are common (7–88.9%), including maculopapular eruptions, erythematous rash, periorbital edema, pityriasis rosea-like rash, and psoriasiform lesions. While several reports of exacerbation of pre-existing psoriasis, and development of de-novo psoriasis after the initiation of imatinib have been described, remission of psoriasis with imatinib is rather unusual, and only a single case has been described so far [2, 3].

A 35-year old man presented to our clinic with a 2-month history of left upper quadrant discomfort. He was diagnosed with psoriasis 10-years back, and treated with topical corticosteroids, with no significant improvement. Currently, he was not receiving any therapy for psoriasis. Examination revealed extensive well-defined erythematous plaques with silvery white scales involving the face, extensor aspect of upper and lower extremities, abdomen, and back, indicating active psoriasis (Fig. 1). Liver (5 cm) and spleen (20 cm) were palpable per-abdomen. Blood investigations revealed marked leukocytosis ($125 \times 10^9/l$), and a left-shifted myelogram, suggesting a possibility of myeloproliferative

neoplasm. Cytogenetics from bone marrow aspirate revealed Ph chromosome, and *BCR-ABL1* mRNA transcript was detected in the peripheral blood by RT-PCR, confirming the diagnosis of CML. Treatment with imatinib (400 mg once daily) resulted in a marked improvement in skin lesions within 1-month. Patient achieved complete hematological remission (CHR) at 1-month and an optimal molecular response at 3-months of treatment (*BCR-ABL1*-6.5% by international scale). Psoriasis remitted completely at 3-months, and continues to be in remission at 5-months of follow-up (Fig. 2). Apart from inducing apoptosis of Ph + malignant cells, imatinib has been shown to exert an inhibitory effect on normal hematopoietic cells including multipotent progenitor cells, dendritic cells, monocyte/macrophage development, and T-cells. Both CD4 + CD25 + FOXP3 + regulatory T-cells (Tregg), and effector T-cells (CD4 + and CD8 + cytotoxic T-cells) are inhibited by imatinib as a result of inhibition of tyrosine kinase LCK, a key mediator of T cell receptor activation [4]. Tregg mediate peripheral tolerance, exert an immunosuppressive effect, and protect against autoimmunity. While Tregg inhibition could promote autoimmunity, resulting in imatinib-induced psoriasis, inhibition of effector T-cells mediates immunosuppression, and could therefore provide a plausible explanation for remission of psoriasis in our case. Present case highlights that imatinib exerts a potential immunomodulatory effect, mechanistically distinct from *BCR-ABL1* inhibition. Resulting clinical manifestations likely depend on the differential influence on the two T-cell subsets (Tregg and effector cells). Potential role of imatinib in the treatment of psoriasis needs to be explored.

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Fig. 1 Pre-treatment clinical photograph of the patient showing extensive well-defined erythematous plaques with silvery white scales involving the face, extensor aspect of upper and lower limbs, abdomen, and back, indicating active psoriasis

Fig. 2 Clinical photograph of the patient, 3-months after treatment with imatinib, showing complete resolution of the skin lesions

Conflict of interest Authors have no conflict of interests to declare.

Ethical standard The article has not been submitted elsewhere for consideration of publication. The article complies with the ethical standards by declaration of Helsinki.

Consent for publication The authors state that a written and informed consent was obtained from the patient prior to publication.

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Compliance with ethical standards