Annals of Hematology (2019) 98:1525–1527
https://doi.org/10.1007/s00277-019-03623-z

LETTER TO THE EDITOR

Clinical efficacy of bortezomib and lenalidomide in blastic plasmacytoid dendritic cell neoplasm

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Received: 4 December 2018 / Accepted: 17 January 2019 / Published online: 29 January 2019

Dear Editor,

A 43-year-old man had a history of a honeybee sting on his left forearm, followed by red rash, acute pain, swelling and locally increased skin temperature, which were all relieved by anti-inflammatory treatment. However, there was a small, dark purple residual nodal left, which was diagnosed as blastic plasmacytoid dendritic cell neoplasm by biopsy. The tumour cells from the local skin lesion (left forearm) were positive for CD2, CD7, CD4, CD56 and CD123, and the patient's blood was negative for Epstein-Barr virus. We provided chemotherapy and radiotherapy; however, the progression-free survival was very short. In November 2017, bone marrow infiltration had occurred, and we administered cyclophosphamide, doxorubicin, platinum, vincristine and chidamide successively, all of which had no effect. In June 2018, the patient's bone marrow aspirate was hypercellular with 90% abnormal cells, and the peripheral blood showed severe cytopenia. We then chose bortezomib (1.3 mg/m^2, d1, d4, d8, d11, subcutaneously injected, q4w) plus lenalidomide (10 mg qd) for treatment. Five days after administering the first dose of bortezomib, the white blood cell count increased. Surprisingly, after 2 cycles of this regimen, flow cytometric immunophenotyping indicated no tumour cells in the bone marrow (Fig. 1). During the first two courses, we observed no tumour lysis syndrome; however, the patient had slight peripheral nerve toxicity. From the first diagnosis of blastic plasmacytoid dendritic cell neoplasm (BPDCN), the overall survival is 40 months without haematopoietic stem cell transplantation. The patient is now receiving continued therapy.

BPDCN is a rare malignant disease accounting for 0.44% of haematological tumours; 60–90% of patients

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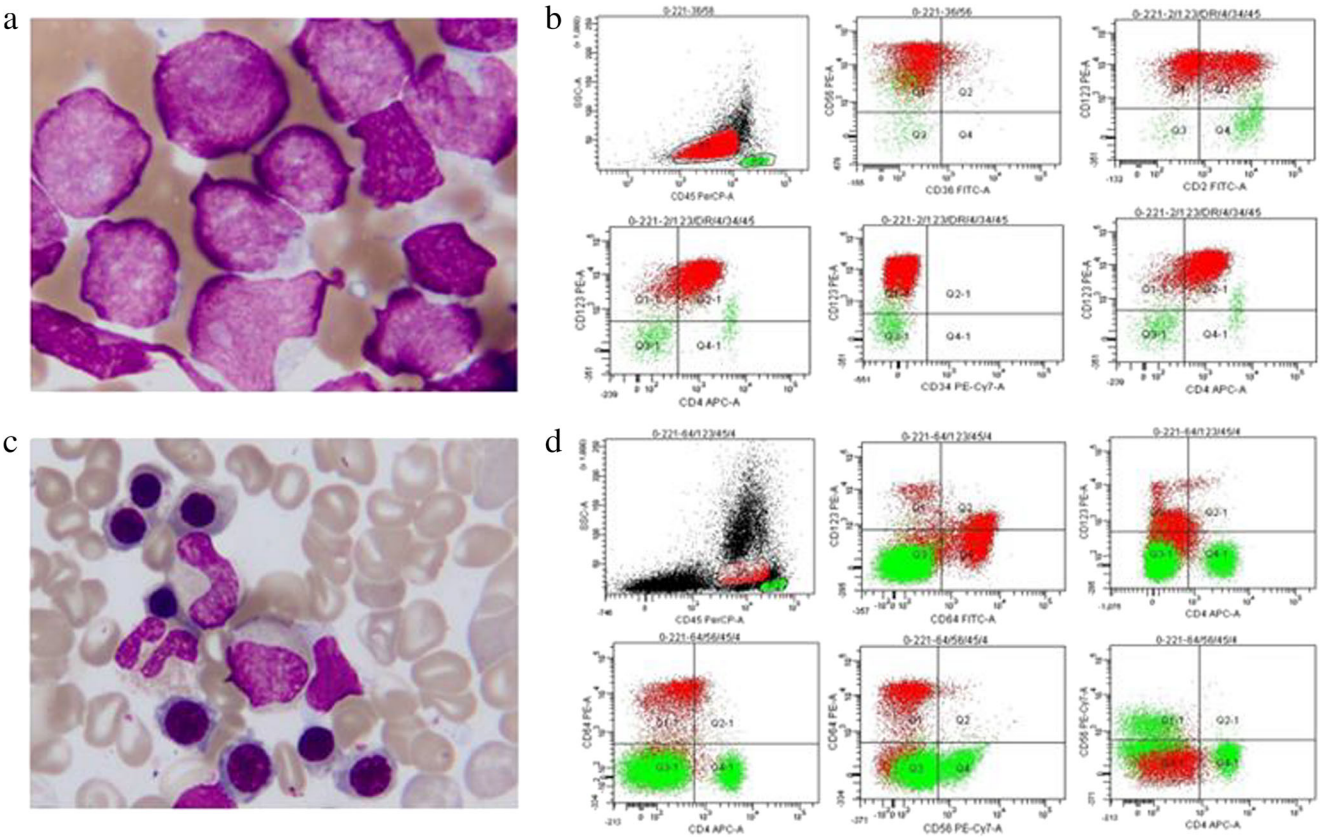

Fig. 1 The changes of bone marrow before and after treatment. Panels **a** and **b** showed BPDCN cells infiltrated in bone marrow's aspirate and flow cytometry before bortezomib and lenalidomide treatment. Panels **c** and **d** showed the normal bone marrow morphology and flow cytometry after 2 cycle bortezomib and lenalidomide

have bone marrow involvement at onset or during progression, and treatment includes acute leukaemia regimens and haematopoietic stem cell transplantation [1–3]. The pathogenesis of BPDCN remains largely unknown. Alterations of some genes in the NOTCH signalling pathway and abnormal NF-κB signalling pathway activation are indicated to have possible roles in tumour development [4, 5]. In vitro experiments have shown that upregulating the NF-κB p105 precursor-coding gene (NFKB1) activates this pathway in BPDCN cells [6]. We present a refractory BPDCN case after a honeybee sting in which CR in the bone marrow was achieved after bortezomib and lenalidomide treatment. These results indicate a new, effective therapy for this disease, especially for those who are unfit for intense chemotherapy or haematopoietic stem cell transplantation. The treatment regimen appeared to be highly effective and convenient with minimal adverse effects. The clinical response to bortezomib with added lenalidomide suggests that the NF-κB signalling pathway may be an important mechanism for controlling tumour cell proliferation. Based on the good efficacy in this case, treating more patients with these two drugs should be considered.

Authors' contributions Each author was involved in the writing of the manuscript. All authors approved the final manuscript.

Compliance with ethical standards

Conflict of interest The authors declare that they have no competing interests.

Informed consent Informed consent was obtained from the participating patient of the case description.

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