Killing two birds with one stone: *BRAF V600E* inhibitor therapy for hairy cell leukemia and Langerhans/dendritic cell sarcoma

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Dear Editor,

We read with great interest the article published in Annals of Hematology on a patient with Langerhans/dendritic cell sarcoma arising from hairy cell leukemia with both lesions demonstrating almost identical karyotypes and identical clonal immunoglobulin gene rearrangements [1]. This case is very interesting in light of fresh data on *BRAF V600E* mutations in several different tumor types [2].

Whole exome sequencing of patients with hairy cell leukemia has revealed *BRAF V600E* mutation [3]. This *BRAFV600E* mutation has been described as a disease-defining event [3] in hairy cell leukemia and has been implicated in the pathogenesis of hairy cell leukemia. Langerhans cell histiocytoses have also been reported to harbor the *BRAFV600E* mutation [4]. Histiocytoses are extremely rare diseases with variable clinical syndromes and *BRAFV600E* mutations have been reported in multiple histiocytoses subtypes including Erdheim–Chester disease [5].

In the light of these results, the case reported is very fascinating [1]. It may be interesting to profile the *BRAFV600E* status of the hairy cell leukemic clone and the histiocytic/dendritic sarcoma clone. If confirmed, this could suggest clonality and may also indicate a common origin of these diverse rare diseases. Moreover, for this particular patient this may have implications for targeted therapy. Vemurafenib, a *BRAF* inhibitor has been recently Food and Drug Administration approved for the therapy of *BRAFV600E* mutant metastatic melanoma [6]. Although hairy cell leukemia is a treatable disease with standard regimens, rare relapsed patients could still benefit

from *BRAF inhibitor* targeted therapy and a proof of concept study has already been reported [7]. Some patients with Langerhans cell histiocytoses may have an aggressive clinical course and patients with refractory disease may have few options. *BRAF* inhibitor-targeted therapy may be the way to kill two birds with one stone such as in this patient if *BRAFV600E* mutation is confirmed.

Conflict of interest The authors declare that they have no conflict of interest

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