Blastic Plasmacytoid Dendritic Cell Neoplasm: A Cutaneous Herald

Danielle R. Lazzara, DO1, Martin Ziac, MD2, Brad P. Glick, DO, MPH, FAOCD, FAAD3

1LECOMT/Larkin Community Hospital – Palm Springs Campus, Dermatology Residency Program, Hialeah, FL
2Greater Miami Skin & Laser Center, Miami, FL
3Glick Skin Institute, Margate, FL

ABSTRACT

Blastic plasmacytoid dendritic cell neoplasm (BPDCN) is an extremely rare and aggressive hematopoietic malignancy that typically manifests with cutaneous lesions that herald the development of bone marrow involvement and fulminant acute leukemia. Diagnosis is often dependent on recognition of skin lesions, which express the characteristic immunophenotype CD4, CD56, and CD123. Patient prognosis is poor as disease tends to relapse despite initiation of intensive multi-agent chemotherapeutic regimens. Recent FDA approval of CD123-targeted therapy, tagraxofusp-erzs, in treatment-naïve and previously treated patients offers promising results per clinical trials and may improve patient survival.

CASE REPORT

A 77 year old Caucasian male presented with a 2 month history of asymptomatic nodules located to the back and a ‘bruise-like’ patch to the right medial knee. Lesions were reported to rapidly enlarge and disseminate within days of initial presentation. Review of systems was negative for fatigue, fever, chills, night sweats, cough, shortness of breath, chest pain, history of frequent infections, easy bruising/bleeding, or weight loss.

Histopathology revealed a diffuse monomorphous infiltrate of the papillary dermis composed of medium-sized cells with blastic morphology. Immunohistochemistry (IHC) demonstrated positive staining for CD4, CD56, CD123, TdT, CD43, & CD45. Staining was negative for T cell (CD3, CD5), B cell (CD20), myeloid (MPO), monocyte (CD68, lysozyme), and hematopoietic stem cell (CD117, CD34) lineage markers. EBER in situ hybridization was negative and Ki-67 proliferation index was 10-20%.

CBC and CMP were within normal limits. Patient was extensively worked up for extracutaneous disease including repeat blood work with serum immunofixation electrophoresis and CT Chest, Abdomen and Pelvis with contrast, which were negative for disseminated disease. Bone marrow biopsy was consistent with a concurrent myeloid neoplasm.

Patient will begin tagraxofusp-erzs transfusion therapy.

DISCUSSION

BPDCN is estimated to represent <1% of all hematologic malignancies and cutaneous lymphomas (1-3). Less than 300 cases are described in the literature worldwide (2,4). BPDCN most commonly affects elderly, male patients. Initial presentation with solitary or multifocal cutaneous lesions is reported in greater than 90% of affected individuals (4). Lesions appear as ‘bruise-like’ patches or red-to-violaceous infiltrative nodules that primarily present on the upper trunk or face and rapidly progress in the absence of treatment (1,3). Frequently the disease is already disseminated to the peripheral blood, lymph nodes, and bone marrow at time of diagnosis. BPDCN often co-exists with an underlying myelodysplastic syndrome and will inevitably develop into an acute leukemia. Generally, patients are asymptomatic and rarely exhibit B symptoms (1-4). The characteristic IHC phenotype expressed by BPDCN is CD4, CD56, CD123, TCL1, and TdT (2,3,5). Lineage specific antigen markers for T-cells, B cells, cytotoxic, and myelomonocytic cells are usually negative, with the exception of a few myeloid (CD68, CD33) and T-cell associated antigens (CD2, CD7, CD43, CD45RA ) detected in a substantial number of cases. EBV by in situ hybridization are consistently negative (5). Overall patient prognosis is poor, with a median survival of 12-14 months. Due to the aggressive nature of BPDCN, it is imperative that patients begin systemic therapy irrespective of localized or disseminated disease. Unfortunately, there is a lack of consensus on optimal treatment guidelines and few therapeutic options exist. Sustained remission has been achieved using acute lymphoblastic leukemia (ALL)-like protocols followed by allogeneic stem cell transplantation (1,4). To date, bone marrow transplantation has been the only treatment to achieve long-term survival, albeit inconsistently, and many patients are not suitable candidates due to advanced age (2-3). Tagraxofusp-erzs, a diphtheria toxin conjugated to IL-3, targets IL-3 receptor (CD123) and is a promising new treatment for patients diagnosed with BPDCN.

CONCLUSION

It is critical for dermatologists to be aware of the clinicopathologic correlation of BPDCN to better facilitate early diagnosis and initiation of treatment.

REFERENCES