Myeloid/lymphoid neoplasms with eosinophilia: report of two cases with different clinical presentation

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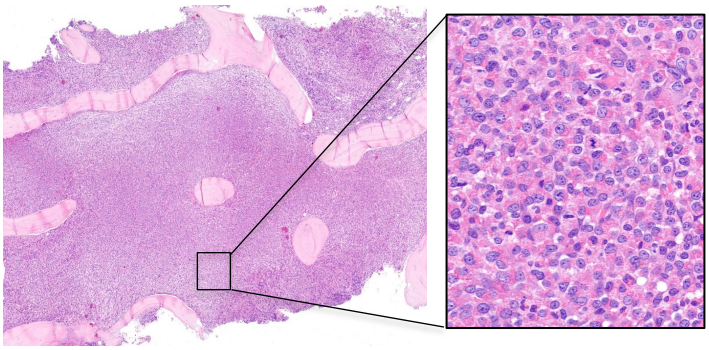
Objectives

Myeloid/lymphoid neoplasms with eosinophilia (MLN-eos) and rearrangements of PDGFRA, PDGFRB, FGFR1 and PCM1-JAK2 include rare and heterogeneous clinical-pathological entities with some similarities, not always associated with peripheral eosinophilia. Accurate diagnosis and demonstration of the specific genetic substrate has important implications since target therapy is available. We report two cases showing similar bone marrow features but different clinical presentation.

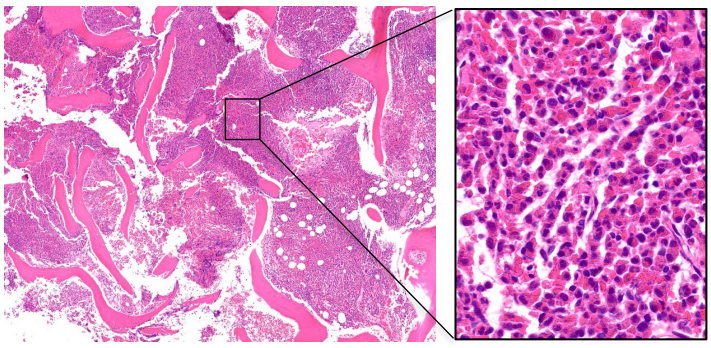
Materials and Methods

Bone marrow biopsies were stained with Hematoxylin-Eosin, Giemsa and Gomori. Immunohistochemical stains for E-cadherin, Myeloperoxidase, CD15, CD61, CD34, CD117, Tryptase, CD20, CD3, CD30 and CD138 were performed.

CASE 1



CASE 2

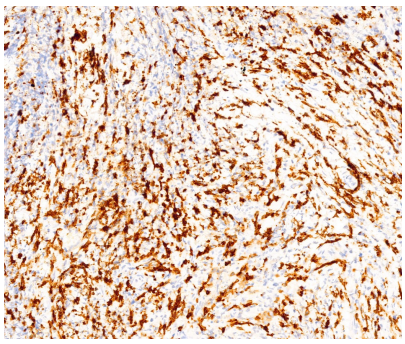


On the left, hypercellular bone marrow (hematoxylin and eosin stain, original magnification 2X). On the righ, high power view shows eosinophilic myelocytes as large oval cells with moderate cytoplasm containing cytoplasmic pink-reddish granules and a nucleus with coarse chromatin and indistinct nucleoli. No mature eosinophils are evident (hematoxylin and eosin stain, original magnification 60X).

Results

Case 1: Male, 57-years old, presenting with mild anemia (Hb 11 g/dl) and splenomegaly.
Case 2: Male, 65-years old, presenting with weight loss, night sweats, leukocytosis (20500/mm 3) with eosinophilia (15800 /mm 3) and hepato-splenomegaly.

In both cases, bone marrow was hypercellular (90% of hematopoietic component) with a prominent proliferation of immature eosinophilic granuloblasts. The latter were organized in large nodules displacing residual hematopoietic cells (case 1) and were associated with areas of necrosis (case 2). Dyserythropoiesis and dysmorphic features of megakaryocytes were evident. Blast count (CD34+, CD117+) was <5%. A significant increase of atypical, spindle shaped mast cells, isolated or in small loosely cohesive groups accounting for 15% of bone marrow cellularity, was observed. Recognition of eosinophilic granuloblasts prompted genetic analysis that showed PDGFRB (case1) and PDGFRA (case2) gene rearrangement.



Expansion of spindle-shaped mast cells which do not form highly cohesive groups (immunoperoxidase with anti-tryptase antibody, original magnification 20X)

Increase in reticulin fiber network (silver stain, original magnification 4×)

Conclusions

Diagnosis of MLN-eos may be challenging. Pathologists may be the first professional to suspect the disorder and should be aware of the therapeutic implication. Accurate BOM marrow evaluation with a panel of immunohistochemical reactions, and specific molecular analyses are required for proper diagnosis.