

## CLINICAL IMAGE

# Abnormal eosinophils with immature eosinophilic granules in chronic myeloid leukemia in accelerated phase

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**Abstract**

Abnormal eosinophils with immature eosinophilic granules are typically observed in acute myeloid leukemia with *inv* (16) (p13.1q22) or *t* (16;16) (p13.1;q22) but can also be seen in chronic myeloid leukemia without *inv* (16) or *t* (16;16).

**KEYWORDS**

abnormal eosinophils, accelerated phase, acute myeloid leukemia with *inv*(16)(p13.1q22) or *t*(16;16)(p13.1;q22), *CBFB-MYH11*, chronic myeloid leukemia

## 1 | CASE

Abnormal eosinophils with immature eosinophilic granules are the usual morphological features seen in acute myeloid leukemia with *inv* (16) (p13.1q22) or *t* (16;16) (p13.1;q22). We report the presence of these cells in chronic myeloid leukemia in accelerated phase without *inv* (16) (p13.1q22) or *t* (16;16) (p13.1;q22).

A 65-year-old woman with a history of chronic myeloid leukemia (CML) presented for follow-up. She had been initially treated with imatinib, and she was then switched to dasatinib due to a suboptimal response. Subsequently, her therapy was switched to ponatinib due to the development of a T315I mutation. Ponatinib had been held for 1 month due to neutropenia. A complete blood count revealed anemia (hemoglobin, 8.7 g/dl), leukocytosis ( $54.8 \times 10^9/L$ ), and thrombocytosis ( $601 \times 10^9/L$ ). A peripheral blood smear showed 8% neutrophils, 1% myelocytes, 5% eosinophils, 4% lymphocytes, 81% basophils, and 1% blasts. Some of the eosinophils contain both eosinophilic granules and

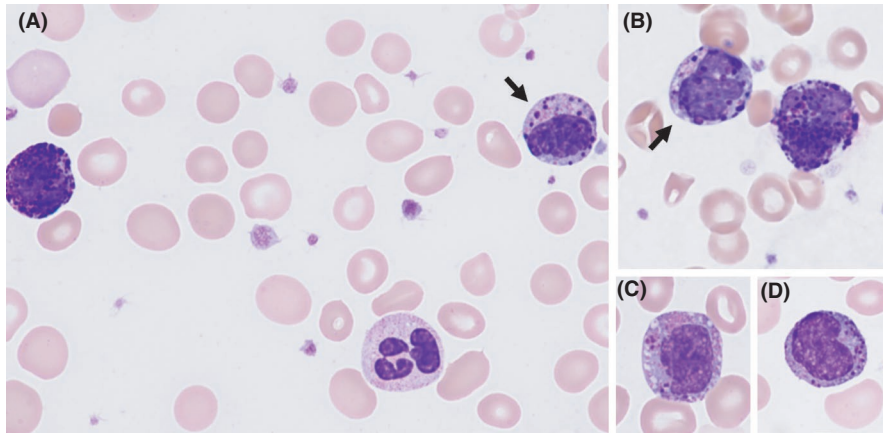
large basophilic colored granules (Figure 1). A bone marrow aspiration and biopsy demonstrated markedly hypercellular bone marrow with myeloid hyperplasia including many basophils and 2%–3% blasts. Chromosome analysis revealed *t* (9;22) and *t* (7;17) in all cells (46,XX,t [7;17] [p15;q23],t [9;22] [q34;q11.2] [20]). FISH analysis for *CBFB-MYH11* was negative. Given the presence of  $\geq 20\%$  basophils in the peripheral blood, a diagnosis of CML in accelerated phase was rendered.

## 2 | DISCUSSION

Abnormal eosinophils with immature eosinophilic granules are characteristically observed in acute myeloid leukemia with *inv* (16) (p13.1q22) or *t* (16;16) (p13.1;q22); *CBFB-MYH11*. They have also been reported in CML with clonal evolution showing *inv* (16)/*t* (16;16) in addition to *t* (9;22).<sup>1,2</sup> The immature eosinophilic granules are often larger than those normally observed in immature

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**FIGURE 1** Peripheral blood smears showing abnormal eosinophils [arrows in (A) and (B), (C), and (D)] containing both eosinophilic granules and large “basophilic granules” (Wright-Giemsa stain; original magnification×1000)

eosinophils, are purple-violet in color, and are most often found at the late promyelocyte and myelocyte stages. This case demonstrates that the presence of these cells does not always signify the presence of *inv*(16)(p13.1q22) or *t*(16;16)(p13.1;q22).

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#### CONFLICT OF INTEREST

None.

#### AUTHOR CONTRIBUTIONS

JC wrote the article, prepared the figure, and did literature review. PJ and XQ edited the manuscript. ST discussed with the patient about the publication and obtained the written consent. XQ supervised this work. All authors have read and approved the final manuscript.

#### ETHICAL APPROVAL

Ethical review and approval of the study are not applicable in this case.

#### DATA AVAILABILITY STATEMENT

No datasets were generated or analyzed during the current study.

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