IMAGES

Stodtmeister Cells (Polymorphs with Pelger-Huët Anomaly) Showing “Faggots” in Mixed Phenotypic Acute Leukemia (T/Myeloid)

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Abstract “Faggot” cells, named for the resemblance of multiple Auer rods to a bundle of sticks, are often considered sine qua non for acute promyelocytic leukemia. However, blasts in other acute myeloid leukemias rarely also show faggot cells. This case demonstrates faggot cells in stodtmeister cells in mixed phenotypic acute leukemia. In addition to being uncommon, this case also highlights the importance of immunophenotyping and genetic analysis in avoiding misdiagnosis and inappropriate therapy.

Keywords Faggot cells · Auer rods · Acute promyelocytic leukemia · Stodtmeister cells

A 32 year woman presented with a 8 day history of fever and ecchymotic patches throughout the body. She was febrile with a temperature of 100.2 °F, the blood pressure was 109/86 mmHg and pulse rate was 95/min. On systemic examination there was no organomegaly or lymphadenopathy. Her hemoglobin was 6.3 g/dl, total leucocyte count was $28.2 \times 10^9/l$ and platelet count was $40 \times 10^9/l$. Peripheral blood film revealed 27% blasts and stodtmeister cells(non-lobed neutrophils exhibiting a Pelger-Huët anomaly) showing “faggot” cells (Figs. 1, 2).

Fig. 1 Peripheral blood smear shows stodtmeister cell (leftwards arrow) with “faggots”. Also another pseudo pelgeroid polymorph (upwards arrow) is noted showing long slender Auer rods. May-Grunwald Giemsa Stain, X 1000

Fig. 2 Peripheral blood smear shows two blasts (downwards arrow) having irregular nuclear membrane, coarse chromatin and frequent cytoplasmic pseudopods/blebs. A dysplastic polymorph with “faggots” is also noted (leftwards arrow). May-Grunwald Giemsa Stain, X 1000

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Fig. 3 Flow cytometric analysis shows a single cluster of blasts (red in colour) in the dim CD45 region with a low side scatter (SSC vs. CD45 gating). These CD34 positive blasts express anti-MPO and anti-cytoplasmic CD3, both of which are lineage defining markers (color figure online)

Bone marrow aspiration showed 72% blasts with irregular nuclear membrane, coarse chromatin and inconspicuous nucleolus, the cytoplasm was scant and agranular with frequent pseudopods. Flow cytometric immunophenotyping showed a single cluster of blasts in the dim CD45 region and showing a low side scatter (SSC vs. CD45 gating). The blasts showed bright positivity with anti-CD13, anti-CD117, anti-HLA-DR, anti-CD2, anti-CD7, anti-CD34 and expressed both lineage specific markers of anti-MPO (myeloperoxidase) and anti-cytoplasmic CD3, consistent with the diagnosis of mixed phenotypic acute leukemia (MPAL) (T/Myeloid) (Fig. 3). Cytogenetic and molecular studies did not reveal any genetic abnormality. She was started on Hyper CVAD protocol. Faggot cells although virtually pathognomic for acute promyelocytic leukemia may also be seen in other acute leukemias [1]. This case demonstrates faggot cells in stadtmeister cells in MPAL, T/Myeloid. Stadtmeister cells are a variety of dysplastic polymorphs exhibiting pelger-huët anomaly with non-lobed nucleus. They are seen in congenital pelger-huet anomaly, sepsis, drug induced dysplasia, acute leukemias and myelodysplastic syndromes [2, 3]. Faggot cells in these dysplastic pelgeroid neutrophils in MPAL have not been previously described. Presently the laboratory approaches to leukemia diagnosis are multi-disciplinary in nature

involving detailed morphology, cytochemistry, immunophenotype, and genetic studies [4]. Not infrequently the hematopathologists in resource-constrained settings may omit immunophenotyping in obviously myeloid leukemias and genetic testing is often inaccessible. Our case, however, emphasizes the significance of immunophenotyping by flow cytometry and genetic analysis in avoiding misdiagnosis and incongruous therapy.

Compliance with Ethical Standards

Conflict of interest The authors have no conflicts of interest to declare.

Ethical Approval All procedures performed in studies involving the human participant were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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