Diagnostic Dilemma in the Morphological Detection of Flower Cells in Lymphomas

Neha Singh¹ · Jatin Gandhi¹ · Narendra Agrawal² · Ajit Panaych¹ ·
Narender Tejwani¹ · Anurag Mehta¹

Received: 23 November 2016 / Accepted: 18 January 2017 / Published online: 27 January 2017
© Indian Society of Haematology & Transfusion Medicine 2017

Abstract “Flower cells” are described typically in HTLV-1 induced adult T cell leukemia. Very few case reports have been published documenting flower cells in B cell lymphomas. We herein present a case of Burkitt lymphoma proven on the basis of immunophenotyping and FISH studies, with “flower cells” morphology.

Keywords Burkitt lymphoma · Flower cells · Immunophenotyping

Introduction

Sixteen years old female presented with the complaints of breathlessness and abdominal distension for 1 month. Hemogram showed Hb: 10.1 g/dl, TLC: 30,100/cumm and Platelet count: 246,000/cumm. Serum LDH level was markedly elevated (>1000 U/L). Peripheral smear examination revealed leukocytosis with 26% large-sized (>5 times the size of a small lymphocyte) atypical lymphoid cells with marked nuclear convolutions, some of them resembling “flower cells/clover-leaf cells” (Fig. 1). Contrast-enhanced computed tomography (CECT) showed multiple, conglomerated cervical lymphnodes, bilateral pleural effusion, ascites with significant periportal lymphadenopathy. In view of massive lymphadenopathy with leukemic presentation, raised LDH and flower cell

Fig. 1 Flower cells in peripheral blood

morphology, possibility of non Hodgkins lymphoma was strongly suspected, and further work-up was advised for confirmation. On immunophenotyping, these atypical lymphoid cells were positive for CD20, CD10, surface IgM, CD38, CD79b and FMC-7 with clonal restriction for kappa light chain (Fig. 2). Bone marrow evaluation revealed intermediate-sized atypical lymphoid cells with deeply basophilic cytoplasm containing abundant cytoplasmic vacuoles, round nucleus and prominent 2–3 nucleoli (Fig. 3). Immunohistochemistry done on bone marrow biopsy showed positivity for c-myc (70%; moderate to strong intensity), bcl-6 (20%, moderate, considered negative), and Ki-67 (>99%). FISH studies showed c-myc translocations involving chromosome 8. Thus, a final diagnosis of Burkitt lymphoma in leukemic phase (Stage IV), with flower/clover-leaf cell morphology was made. The patient was given first cycle of R-da-EPOCH based chemotherapy, following which the symptoms resolved.

✉ Neha Singh
drnehasingh123@gmail.com

¹ Department of Laboratory Medicine, Rajiv Gandhi Cancer Institute and Research Center, Rohini, Delhi, India

² Department of Hemato-Oncology, Rajiv Gandhi Cancer Institute and Research Center, Rohini, Delhi, India

Flower cells are described typically in HTLV-1 induced adult T cell leukemia, associated with a CD4+/CD25+ immunophenotype. They may also be seen in asymptomatic carriers of HTLV-1. Although Sezary syndrome may also show convoluted nuclei with peripheral spill, a typical clover-leaf/flower cell morphology is usually not seen [1]. The WHO classification of non Hodgkins lymphoma recognizes morphologic variants of diffuse large B cell lymphoma and Burkitt lymphoma with marked nuclear pleomorphism [2]. However, very few case reports have been published documenting “flower cells” in B cell lymphomas [3]. Here, it should be noted that even within this framework, the flower cell morphology seen in our case is uncommon, and is clearly of B cell lineage. This demonstrates the use of ancillary techniques such as

Fig. 3 Classical Burkitt morphology in bone marrow aspirate smears

Fig. 2 Flowcytometry of peripheral blood “flower cells” shows CD19+/CD20+/CD10+/IgM+ immunophenotype

immunophenotyping and FISH/cytogenetic studies in the classification of atypical, polylobated mononuclear cells and also that flower cell morphology is not restricted only to Adult T cell leukemia as described earlier [4]. It also emphasizes that any morphologic features deviating from classical BL should still be classified as Burkitt Lymphoma if the immunophenotypic and genetic criteria are otherwise fulfilled [5].

Compliance with Ethical Standards

Conflict of interest The authors state that there is no conflict of interest.

Ethical Approval This case report does not contain any studies with human participants or animals performed by any of the authors.

References

1. Jain P, Prabhash K (2010) Flower cells of leukemia. *Blood* 115:1668
2. Vardiman JW, Thiele J, Arber DA et al (2009) The 2008 revision of the World Health Organization (WHO) classification of myeloid neoplasms and acute leukemia: rationale and important changes. *Blood* 114(5):937–951
3. Wong E, Juneja S (2014) Diffuse large B-cell lymphoma in leukemic phase with flower cell morphology. *Blood* 123(22):3378
4. Matutes E (2007) Adult T-cell leukaemia/lymphoma. *J Clin Pathol* 60(12):1373–1377
5. Thomas DA, O'Brien S, Faderl S et al (2011) Burkitt lymphoma and atypical Burkitt or Burkitt-like lymphoma: Should these be treated as different diseases? *Curr Hematol Malig Rep* 6(1):58–66