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HAEMATOLOGY IMAGES

Blastic transformation of follicular lymphoma

Hayato Mori[1] | Takayuki Mitsuhashi[2] | Yoko Yatabe[1] | Jun Kato[3] | Hanako Tsujikawa[4] | Hiromichi Matsushita[2]

[1]Clinical Laboratory, Keio University Hospital, Tokyo, Japan

[2]Department of Laboratory Medicine, Keio University School of Medicine, Tokyo, Japan

[3]Division of Hematology, Department of Medicine, Keio University School of Medicine, Tokyo, Japan

[4]Department of Pathology, Keio University School of Medicine, Tokyo, Japan

Correspondence
Hiromichi Matsushita, Department of Laboratory Medicine, Keio University School of Medicine, 35 Shinanomachi, Shinjuku-ku, Tokyo 160–8582, Japan.
Email: hirommat@keio.jp

A 65-year-old woman was followed up for a serous cystic neoplasm of the pancreas and mild intraperitoneal lymphadenopathy. Abdominal CT and MRI findings were stable for 5 years without apparent abnormal laboratory findings. Small- to medium-sized lymphoid cells with a cleaved nucleus at a high N/C ratio were observed in the peripheral blood (PB) (Figure 1A). Bone marrow (BM) examination detected cells with similar features (30.3%), as well as medium-sized cells with irregular contours of the nuclear membrane and small vacuoles in their cytoplasm (66.1%) (Figure 1B). Flow cytometry was used to analyze the different cell types and identified two types of BM cells. The SSClo/CD45+ fraction showing the mature B-cell pattern such as CD19+/CD10+/CD20+/CD22+/ CD23w+/sIgL-κ+/TdT- (Figure 1C), which was also seen in PB, and the SSClo to int/ CD45w fraction, which was CD19-/CD10+/CD20-/CD22-/CD23-/sIg-/TdT+ (Figure 1D), suggesting B acute lymphoblastic leukemia (B-ALL). Immunostaining of the BM sample (Figure 1E) and the involved uterine cervical lesion expressed BCL2, MYC, and TdT. Karyotypic analysis revealed 47,XX,+?i(1)(q10),−9,−10,+14, t(14;18)(q32;q21),?add(16)(p11.2),+der(18)t(14;18) [1/7]. Fluorescence in situ hybridization (FISH) analysis revealed *IgH*::*BCL2* but not *IgH*::*MYC*. Based on all the findings, the patient was diagnosed with B-ALL transformed from follicular lymphoma (FL).

Transformation of FL into B-ALL is rare. In this case, FL and B-ALL were detected in the same BM specimens. Genetic events such as *MYC* rearrangements [1–3] and *TP53* alterations/17p deletion [4, 5] in combination with multiple cytogenetic alterations, have been previously reported to be involved in the transformation of FL to B-ALL. In this case, MYC expression without *IgH*::*MYC* may have contributed to the development of B-ALL.

AUTHOR CONTRIBUTIONS

HMo, TM and HMa wrote and revised the manuscript. TM and YY performed the blood and bone marrow smear examination and flow cytometric studies. HT performed pathological studies. JK evaluated the case and critically reviewed the manuscript. All authors approved the final revision of the manuscript to be published.

CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interest to declare.

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The authors received no specific funding for this work.

DATA AVAILABILITY STATEMENT

The data are not publicly available because of privacy and ethical restrictions.

PATIENT CONSENT STATEMENT

Informed consent was obtained from the patient.

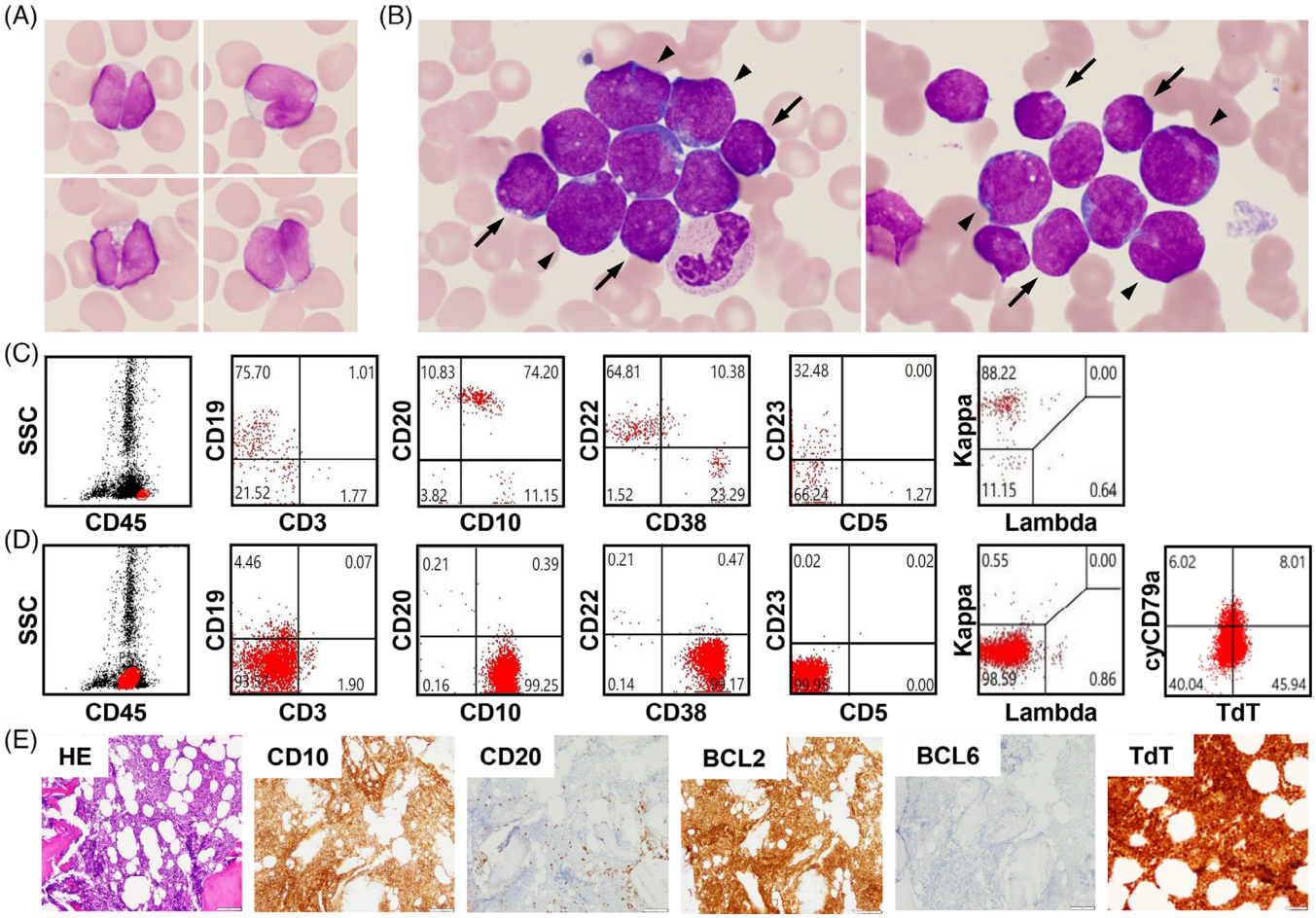

FIGURE 1 (A) Abnormal small- to medium-sized lymphoid cells with a cleaved nucleus and high N/C ratio in the peripheral blood (Wright-Giemsa stain, 1000×). (B) The two populations of abnormal lymphoid cells in the bone marrow (Wright-Giemsa stain, 1000×). Black arrows: Small- to medium-sized lymphoid cells with mature B-cell features. Arrowheads: Medium-sized lymphoid cells with lymphoblastic features. (C) Flowcytometric analysis of the SSClo/ CD45+ fraction. (D) Flowcytometric analysis of the SSClo to int/CD45w fraction. (E) The histopathological (hematoxylin and eosin stain) and immunohistochemical staining of the bone marrow specimen (400×).

ORCID

Takayuki Mitsuhashi https://orcid.org/0009-0004-0627-7577
Jun Kato https://orcid.org/0000-0003-1869-5480
Hiromichi Matsushita https://orcid.org/0000-0002-1629-6630

REFERENCES

1. Young KH, Xie Q, Zhou G, Eickhoff JC, Sanger WG, Aoun P, et al. Transformation of follicular lymphoma to precursor B-cell lymphoblastic lymphoma with c-myc gene rearrangement as a critical event. Am J Clin Pathol. 2008;129:157–1566.
2. De Jong D, Voetdijk BM, Beverstock GC, van Ommen GJ, Willemze R, Kluin PM. Activation of the c-myc oncogene in a precursor-B-cell blast crisis of follicular lymphoma, presenting as composite lymphoma. N Engl J Med. 1988;318:1373–78.
3. Gauwerky CE, Hoxie J, Nowell PC, Croce CM. Pre-B-cell leukemia with a t(8; 14) and a t(14; 18) translocation is preceded by follicular lymphoma. Oncogene. 1988;2:431–35.
4. Wafa A, Moassass F, Liehr T, Bhatt S, Aljapawe A, Al Achkar W. A high complex karyotype involving eleven chromosomes including three novel chromosomal aberrations and monoallelic loss of TP53 in case of follicular lymphoma transformed into B-cell lymphoblastic leukemia. Mol Cytogenet. 2016;9:91.
5. Kroft SH, Domiati-Saad R, Finn WG, Dawson DB, Schnitzer B, Singleton TP, et al. Precursor B-lymphoblastic transformation of grade I follicle center lymphoma. Am J Clin Pathol. 2000;113:411–18.

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