IMAGES AND DIAGNOSIS

Immunofluorescence staining with an antipromyelocytic leukemia antibody for a rapid diagnosis of acute promyelocytic leukemia

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A 69-year-old woman with a history of diabetes mellitus and hypertension was found to have pancytopenia during routine blood test. She was asymptomatic without any bleeding symptoms. Complete blood count test results were as follows: white cell count, $1.2 \times 10^3/\mu L$; hemoglobin, 8.7 g/dL; and platelet count, $90 \times 10^3/\mu L$. Her coagulation profile was normal and peripheral blood morphology did not show any promyelocytes. Bone marrow aspirate showed an increased number of promyelocytes (Fig. 1A). Immunofluorescence staining with an antipromyelocytic leukemia (anti-PML) antibody was positive and showed microparticulate distribution (Fig. 1C). Fluorescence in situ hybridization testing for PML/retinoic acid receptor alpha with dual-fusion and retinoic acid receptor alpha break-apart probes was positive (Fig. 1D). Based on these findings, diagnosis of acute PML (APL) was made.

Immunocytochemical labeling of the wild-type PML protein with the PG-M3 monoclonal antibody directed against the amino terminal portion of the human PML gene product produces a characteristic nuclear speckled pattern, which is attributed to localization of the protein into discrete dots (5–20/nucleus) termed as "PML nuclear bodies" (Fig. 1B) [1]. In APL cells, the PML nuclear body architecture seems to be disrupted and results in a microgranular pattern [2]. PML immunofluorescence staining is a rapid (90-minute turnaround time) and reliable diagnostic test, usually done by immunohistochemistry lab with a high sensitivity (98.9%) and specificity (98.7%) in diagnosing APL and correlates well with cytogenetic and molecular [3].

Conflicts of interest

The authors have no conflicts of interest to declare.

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Fig. 1  (A) Bone marrow aspirate showing increased number of promyelocytes.  (B) Promyelocytic leukemia (PML) nuclear bodies. (C) Immunofluorescence staining with an anti-PML antibody is positive and shows the microparticulate distribution. (D) Fluorescence in situ hybridization testing for PML/retinoic acid receptor alpha with dual-fusion and retinoic acid receptor alpha break-apart probes is positive.

References

