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May-Grünwald Giemsa-fluorescence *in situ* hybridization technique applied to a plasma cell leukemia

Sir,

Plasma cell leukemia (PCL) is a rare malignant plasma cell disorder which is characterized by the presence of more than 2×10^9 plasma cells/L in the peripheral blood.[1,2] Cytogenetic studies performed on plasma cell dyscrasias are scarce and difficult because of the low proliferation rate of plasma cells. Whereas an abnormal karyotype is found in 40% of multiple myeloma (MM) patients, recent reports demonstrate the presence of numerical abnormalities in nearly 90% of patients analyzing interphase nuclei by the fluorescence *in situ* hybridization (FISH) technique.[3,4] Interphase cytogenetic analysis is also possible, on previously stained slides, using the May-Grünwald-Giemsa-FISH (MGG-FISH) technique.[5]

We recently cared for a 75-year-old woman because of a duodenal ulcer. On admission her hemoglobin was 10.3×10^9 gr/L, platelet count 83×10^9/L and leukocyte count 10.7×10^9/L with 26% atypical plasma cells. Serum protein electrophoresis showed a type IgGλ monoclonal component. The bone marrow aspirate revealed an 80% atypical plasmacytosis.

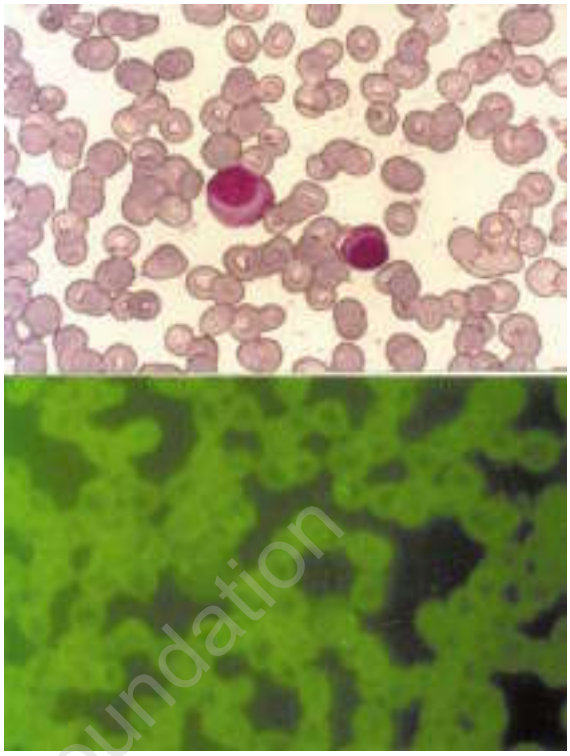

Figure 1. Cytomorphology and interphase FISH of circulating plasma cells from a patient with plasma cell leukemia. In (A), May-Grünwald Giemsa stained plasma cells were identified. In (B), plasma cells were relocated after FISH with spectrum green direct labeled chromosome 18 specific alpha satellite DNA probe. Two hybridization signals are present for chromosome 18.

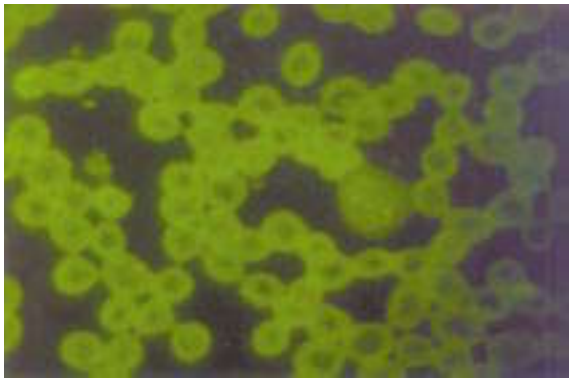

Figure 2. A May-Grünwald Giemsa stained plasma cell was identified and relocated after FISH with a spectrum green direct labeled chromosome 18 specific α-satellite DNA probe. Three hybridization signals are present for chromosome 18.

The patient was diagnosed as having plasma cell leukemia and died 15 days later without receiving any treatment.

Chromosome analysis was performed on a 72-hour culture of peripheral blood with phytohemagglutinin (PHA) and revealed a normal karyotype in 40 mitoses, probably due to stimulation of non-malignant cells.

We performed FISH using specific centromeric probes for chromosomes 3, 7, 11 and 18 on cultured peripheral blood cells, because these are frequently involved in plasma cell dyscrasias.[3,4,6] We evaluated 500 nuclei per probe. Trisomy 3 was detected in 34.8% of the cells and trisomy 18 in 27.2%. Disomy for chromosomes 7 and 11 (94.2% and 91.2% of the cells respectively) was observed.

The combination of MGG staining and FISH with a centromeric probe for chromosome 18 was performed as described by Anastasi *et al*.[5] Previously photographed cells were relocated for evaluation of FISH signals on peripheral blood lymphocytes and plasma cells. One hundred and fifty-two cells were studied: 82/116 plasma cells and 10/36 lymphocytes could be tested for FISH signals. Trisomy 18 was found in 65% of the plasma cells (52/82) and in 1 out of 10 lymphocytes (Figures 1 and 2). We observed that not all but a large proportion of plasma cells had trisomy 18, suggesting that the numerical cytogenetic abnormality could be a secondary change. In addition, we detected trisomy 18 in only one out of ten circulating lymphocytes. Although clonotypic rearrangements as defined by the bone marrow plasma cells in myeloma have been reported among blood lymphocytes, the precise nature of the peripheral blood B cells in MM remains unclear.[7-10] Our results suggest that peripheral blood lymphocytes probably belong to the malignant clone but we can not exclude a false FISH signal.

The present report shows the usefulness of the FISH technique in detecting numerical abnormalities not observed by conventional cytogenetic studies and that the combined MGG-FISH technique is a sensitive test for identifying the cell-lineage of cytogenetic abnormalities.

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Keywords

MGG-FISH, cytogenetics, plasma cell leukemia, PCL, FISH

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Cytogenetic and in situ hybridization findings in 27 patients with atypical B-cell chronic lymphocytic leukaemia

Sir,

Atypical B-CLL (aCLL) is a cytologically differentiated form of B-cell chronic lymphocytic leukemia (B-CLL) first described by the FAB group.[1] aCLL is the variant that has 10-55% of large lymphocytes, prolymphocytes and/or centrocytes.[1] The most common cytogenetic abnormality associated with aCLL is trisomy 12.[2-7] Other chromosomal abnormalities involve 4q, 6q21-q23, 11q, t(11;14)(q13;q32), 13q14, 17p and 17q.[4-6,8] The aim of the present study is to describe the cytogenetic findings in a series of 27 aCLL, focusing our interest on the detection of trisomy 12, del(13)(q14) and del(17)(p13) combining conventional cytogenetics (CC) with *in situ* hybridiza-