Applied Cancer Research 2006; 26(2):73-75

Case Report

Del(11)(q23) in Acute Leukemia Secondary to Treatment of Solid Tumor

Rosemeire Aparecida Vagli Bognone,[1] Bruno Araújo Lima França, MD;[2] José Vassallo, MD, PhD;[3] Irene Lorand-Metze, MD, PhD;[2] Carmen Silvia Passos Lima, MD, PhD[2]

1 Conventional and Molecular Cytogenetics Laboratory, Hematology and Hemotherapy Centre, State University of Campinas

2 Department of Internal Medicine, Medical Sciences School, State University of Campinas

Key words: Neuroectodermal tumors, primitive; Leukemia, lymphocytic, acute; Neoplasia, second primary.

Introduction

An unusual secondary acute leukemia (AL) form was described in patients who had received previous chemotherapy or radiotherapy treatments for neoplasias. This leukemia was characterized by abnormalities of chromosome 11 11q23 region, deletion, del(11)(q23), inversion, inv(11)(q23) or translocation, t(11)(q23), and also by MLL oncogene[1] deletion or rearrangement.

We present a case report of secondary AL after treatment of a solid tumor that presented del(11)(q23), and argue about the possible prognostic value of the different chromosomic region abnormalities.

Case Report

MVB, 33 years old, male, was followed in external service from October 2001 to February 2004, being diagnosed as having a cervical primitive neuroectodermic tumor (PNET). The patient had been submitted cervical lymphadenectomy, localized radiotherapy and adjuvant chemotherapy with alquilant agents (cyclophosphamide, ifosfamide and actinomycin D), inhibitors of topoisomerase II (doxorubicin, etoposide) and mitotic spindle formation inhibitor (vincristin),[2] getting remission of the disease. In February 2004, abnormalities in hemogram (hemoglobin: 11,2g/dl, leukocytes: 176,5x103/µl and platelets: 217,0x103/µl) motivated the patient transference to our service. Bone marrow (BM) hypercelularity at blasts expense (Figure 1A) positive periodic acid-Schiff (PAS) reaction (Figure 1B) were cytological examination findings. Antigens CD19, HLA-DR, CD7 and lambda expression were identified in most blasts evaluated by flow citometry. The diagnostic of acute lymphoid leukemia (ALL) of B origin was established.[3] Cariotype: 46, XY, del(11)(q23) was obtained by the conventional method[4] (Figure 2). The patient received treatment with prednisone, vincristin, daunorubicin and L-asparaginase for ALL remission induction and disease remission was

Correspondence
Carmen Silvia Passos Lima, MD, PhD
Clinical Oncology Service, Department of Internal Medicine
School of Medical Sciences, State University of Campinas
Rua Alexander Fleming, 181, Cidade Universitária "Zeferino Vaz"
Campinas, Brazil 13083-970
Phone 55 19 35217496
E-mail: carmenl@fcm.unicamp.br

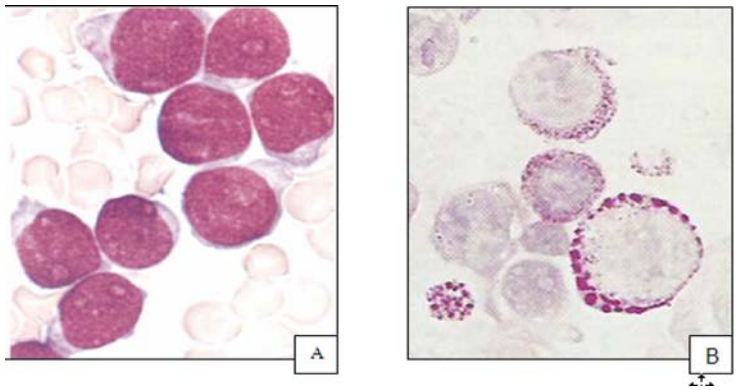

Figure 1 – A: Acute lymphoid leukemia: bone marrow cytological aspects with blasts infiltration (Romanovsky, 100x). B: Blasts with positive periodic acid schiff (PAS, 100x) citochemical reaction

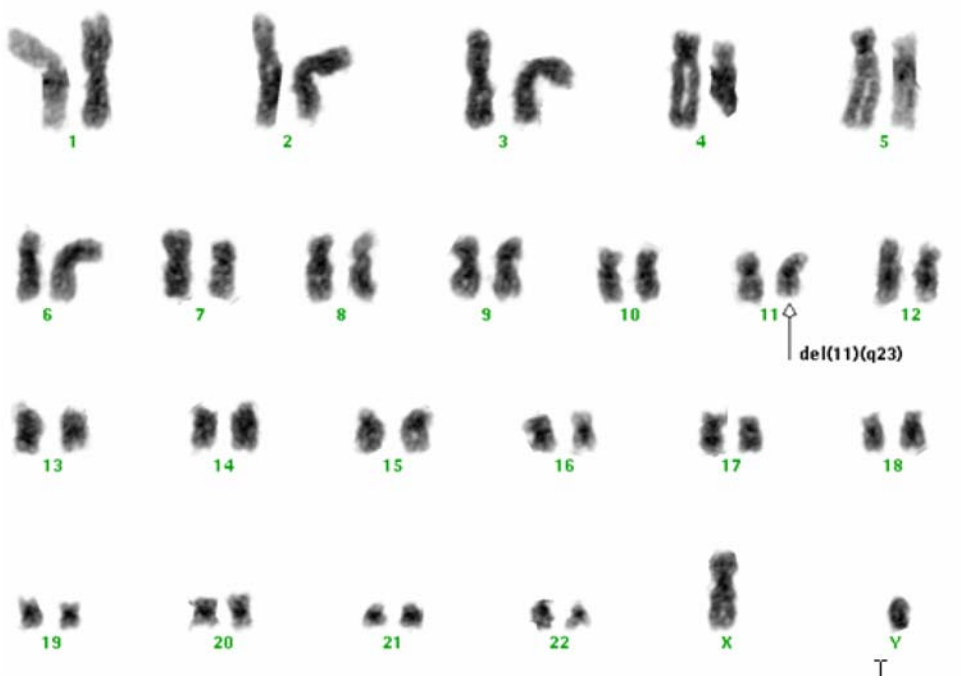

Figure 2 - Cariotype: 46, XY, del(11)(q23) in case of secondary acute lymphoid leukemia due to solid tumor therapeutical treatment

successful. He next opted for alogenic BM transplant but come to die due to septicemia one week after the procedure.

Discussion

11q23 region abnormalities, deletions and translocations had been described in cases of secondary AL linked to the treatment of neoplasias with topoisomerases II inhibitors intercalated with alquilant agents and radiation. These leukemias, of a myeloid or lymphoid kind, present precocious beginning after chemotherapy's ending, occur in acute form and without previous hematological abnormalities.[5,6] However, response to therapeutic in these cases seems to be determined by the type of chromosomic abnormality: cases with 11q23 region deletion or inversion present favorable responses to

conventional chemotherapy,[6] while those with 11q23 region translocation presented recurrences and in general had received alogenic BM transplant as an additional measure.[7,8]

These descriptions had allowed us to conclude that ALL in the reported case possibly was determined by the therapeutics used for controlling the solid tumor. However, it was not possible for us to add data to previously published results on the prognostic value of chromosomic abnormality in the disease, since our patient opted to receive BM transplant after complete remission with conventional chemotherapy.

References

1 Mitterbauer-Hohendanner G, Mannhalter C. The biological and clinical significance of MLL abnormalities in haematological malignancies. Eur J Clin Invest 2004;34:12-24.

2 Grier HE, Krailo MD, Tarbell NJ. Addition of ifosfamide and etoposide to standard chemotherapy for Ewing's sarcoma and primitive neuroectodermal tumor of bone. N Engl J Med 2003;8:694-701.

3 Martins SLR, Rego, EM, Falcão RP. Classificação das Leucemias Agudas: Citologia, Citoquímica e Imunofenotipagem. In: Zago MA, Falcão RP, Pasquini R. (eds.). Hematologia: Fundamentos e Prática. São Paulo, Atheneu, 2001. p.433-45.

4 Swansbury, GJ. Cytogenetic technique for human leukaemias. In: Pollard JM, Walker JM. Methods in Molecular Biology. Totowa: Human Press Inc., 1997. p.323-39.

5 Heim S, Mitelman F. Acute Myeloid Leukemia. In: Heim S, Mitelman F. Cancer Cytogenetics: Chromosomal and Molecular Genetics Aberrations of Tumor Cells. 2nd ed. New York: Willey-Liss, 1995. p.69-140.

6 Raimondi SC, Frestedt JL, Pui CH, Downing JR, Head DR, Kersey JH, Behm FG. Acute lymphoblastic leukemias with deletion of 11q23 or a novel inversion (11)(p13q23) lack MLL gene rearrangements and have favorable clinical features. Blood 1995;86:1881-6.

7 Hilden JM, Frestedt JL, Moore RO, Heerema NA, Arthur DC, Reaman GH, Kersey JH. Molecular analysis of infant acute lymphoblastic leukemia: MLL gene rearrangement and reverse transcriptase-polymerase chain reaction for t(4;11)(q21;q23). Blood 1995;86:3876-82.

8 Behm FG, Raimondi SC, Frestedt JL, Liu Q, Crist WM, Downing JR, Rivera GK, Kersey JH, Pui CH. Rearrangement of the MLL gene confers a poor prognosis in childhood acute lymphoblastic leukemia, regardless of presenting age. Blood 1996;87:2870-7.