percentage of apoptotic cells was detected (7-amino-actinomycin D [7AAD]) at P2 until P10. MSCs were resistant to apoptosis under serum-deprivation conditions. The expression of the cell cycle genes studied was not statistically different compared with controls, and cells did not grow on soft agar.
CONCLUSIONS: MSCs isolated from BM of children retain their characteristics for a serial number of passages and survive under serum-deprivation conditions, a necessary process in a transplantation setting. The cells do not have oncogenic properties, as shown by normal expression levels of oncogenes and tumor suppressor genes, and no growth on soft agar. These findings enhance the use of MSCs in clinical applications.

NDRG1 EXPRESSION IN CHILDHOOD LEUKEMIA AND ITS CORRELATION TO PROGNOSIS AND THERAPEUTIC RESPONSE

Submitted by Ju Gao
Ju Gao, Zhi-Yong Zhao, Li-Xing Yuan, Hui-Xia Wang, Ting-Ting Chen, Ling-Li Pang, Yi-Ping Zhu
Department of Pediatrics, West China Second University Hospital, Sichuan University, Chengdu, China

INTRODUCTION: N-myc downstream regulated gene 1 (*NDRG1*) gene expression has been found to be downregulated in a variety of solid tumors and is now regarded as a suppressor gene. However, little is known about its possible role in hematologic cancers.
OBJECTIVE: Our goal was to study expression of the *NDRG1* gene in childhood leukemia and explore a possible correlation between expression and prognostic factors.
METHODS: Bone marrow or peripheral blood mononuclear cells from 65 children with leukemia and peripheral blood mononuclear cells from 12 healthy control children were isolated: *NDRG1* messenger RNA expression was determined by fluorescence real-time polymerase chain reaction.
RESULTS: *NDRG1* messenger RNA expression in acute leukemia groups collectively (acute lymphocytic leukemia [ALL] [41 cases] and acute monocytic leukemia [24 cases]) was significantly lower than that of normal controls (normalized ratios of *NDRG1* to glyceraldehyde-3-phosphate dehydrogenase copy numbers were 0.27 and 0.25 vs 0.30 and 0.86 in controls, respectively; $P < .01$), although there was no statistically significant difference between the ALL and acute monocytic leukemia groups. *NDRG1* expression was significantly lower in prednisone nonresponder ALL (13 cases) than in prednisone good-responder ALL (15 cases) (normalized ratios: 0.13 and 0.38, respectively). Similarly, *NDRG1* expression was significantly downregulated in high-risk ALL (17 cases) than that in lower-risk ALL (24 cases) (normalized ratios: 0.15 and 0.30, respectively).
CONCLUSIONS: *NDRG1* expression was remarkably downregulated in childhood leukemia, as in other human solid tumors. In addition, its expression in childhood ALL was closely associated with such prognostic factors as prednisone response and risk stratification. Our research suggests that *NDRG1* expression is negatively correlated to ALL prognosis and therapeutic response.

IMMUNE STATUS AND IMMUNE RECOVERY IN CHILDREN WITH LYMPHOMA AT THE END OF THERAPY (CHEMOTHERAPY AND/OR RADIOTHERAPY) AND IN FOLLOW-UP EVALUATIONS

Submitted by Helen Kosmidis
Sofia Kosmidis, Apostolos Pourtsidis, Despina Bouhoutsou, Margarita Baka, Maria Varvoutsi, Dimitrios Doganis, Constantina Kallergi, Nikolaos Douladiris, Maria Synodinou, Fotini Saxoni-Papageorgiou, Helen Kosmidis
Departments of Oncology, Serology, Immunology, and Radiation, Panagiotis and Aglaia Kyriakou Children's Hospital, Athens, Greece

OBJECTIVE: We aimed to evaluate the immune status and immune recovery after completion of chemotherapy and/or radiotherapy in children with lymphoma.
METHODS: We prospectively evaluated humoral and cellular immunity in 22 children with lymphoma (11 with Hodgkin's disease [HD] and 11 with non-Hodgkin's lymphoma [NHL]) at the completion of therapy and every 6 months thereafter.
RESULTS: Immunoglobulin (Ig) levels were normal before the onset of therapy in all but 1 child. At the end of therapy, Ig levels decreased: IgM in 18, IgG in 12, and IgA in 7 children. In addition, 17 of 22 had decreased CD19 levels. In HD after radiotherapy, IgG and CD19 levels increased significantly ($P = .013$ and .004, respectively). IgM levels remained abnormally low in 16 of 22 children up to 18 months after therapy completion. At the end of therapy, helper T lymphocyte (CD4) levels were low in 20 of 22 children, and suppressor (CD8) levels were elevated in 13 of 22 children. (For those with HD before radiotherapy, the CD8 level was high in 10 of 11 children, and the CD4 level was low in 6 of 11 children.) The suppressor CD8 level remained elevated in 12 of 20 children, and helper CD4 level remained abnormally low in 18 of 20 children for a period of 6 to 18 months after therapy. Some immunized children became nonimmune to polio (15 of 22), mumps (6 of 22), rubella (5 of 22), and measles (1 of 22).
CONCLUSIONS: In children with lymphoma, IgM levels remained low for long periods. Helper T lymphocyte levels were low and suppressor levels were

NDRG1 EXPRESSION IN CHILDHOOD LEUKEMIA AND ITS CORRELATION TO PROGNOSIS AND THERAPEUTIC RESPONSE

Ju Gao, Zhi-Yong Zhao, Li-Xing Yuan, Hui-Xia Wang, Ting-Ting Chen, Ling-Li Pang and Yi-Ping Zhu

Pediatrics 2008;121;S119
DOI: 10.1542/peds.2007-2022RRR

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

NDRG1 EXPRESSION IN CHILDHOOD LEUKEMIA AND ITS CORRELATION TO PROGNOSIS AND THERAPEUTIC RESPONSE

Ju Gao, Zhi-Yong Zhao, Li-Xing Yuan, Hui-Xia Wang, Ting-Ting Chen, Ling-Li Pang and Yi-Ping Zhu

Pediatrics 2008;121;S119
DOI: 10.1542/peds.2007-2022RRR