

# F.A.B. CLASSIFICATION OF CHILDHOOD LEUKEMIA IN IRAN

A. A. POURFATHOLLAH, M.S.,\* M. RAKHSHAN, M.D.,\*\*  
M. AHMADI, M.D, AND M. IZADYAR, M.D.\*\*\*

*From the Tarbiat Modarres University\*, Department of Pathology, Faculty of Medicine, Shahid Beheshti University of Medical Sciences\*\*, and the Departments of Pathology and Hematology, Children's Medical Center, Tehran University of Medical Sciences\*\*\*, Tehran, Islamic Republic of Iran.*

## ABSTRACT

Bone marrow specimens from leukemic patients were studied in a 5 year period beginning in 1982 in Children's Medical Center of Teheran, a teaching and referral center for pediatric medicine. The slides were stained by Giemsa-Wright stains, read by at least two persons experienced in bone marrow pathology and classified according to F.A.B. recommendations. Peroxidase or Sudan black-B and P.A.S. reaction were used for differentiation of myeloblasts from lymphoblasts when required. Acute lymphoblastic leukemia is the most prevalent childhood leukemia in Iran, as it is in other countries, but the incidence is relatively lower compared to western countries. The percentage of all leukemic subtypes are almost similar to other reports except for L<sub>2</sub>, M<sub>1</sub> and M<sub>2</sub> where L<sub>2</sub> has a relatively lower occurrence with M<sub>1</sub> and M<sub>2</sub> being more prevalent.

*MJIRI, Vol. 2, No. 4, 263-264,*

## INTRODUCTION

Leukemia is the most common malignancy in children and comprises one third of all malignancies in this age group. According to western reports 76% of childhood leukemias are acute lymphoblastic, 20% myeloblastic and the rest are chronic leukemias of all types, mainly CML.

Various classifications of leukemias are based on morphology, cytochemistry, enzyme and antigenic markers and chromosome phenotypes, but the most popular is morphologic classification recommended by the F.A.B. group. Its prognostic value has been proven clinically.

## MATERIALS AND METHODS

Bone marrow aspirates from 169 leukemic patients were stained with Giemsa or Wright stain and evaluated by two pathologists according to F.A.B. recommendation. Controversial cases were seen by a third pathologist. P.A.S. and peroxidase (or Sudan black)

reactions were used to differentiate myeloblastic from lymphoblastic leukemia.

The patients were admitted to Children's Medical Center in a five year period beginning in 1982. The hospital is the largest teaching center for pediatric medicine in Iran and a referral center from all parts of Iran. Less than 30% of patients were natives of Teheran and for that reason the results of our study are representative of the whole country.

## RESULTS

Results are presented in Tables I and II. Table I shows distribution of frequency of leukemia in Chil-

**Table I. Distribution of frequency of childhood leukemia in Children's Medical Center.**

	ALL	ANLL	CML-other	TOTAL
NUMBER	113	46	10	169
percent	67	27	6	100

**Table II. Distribution of frequency of subgroups of acute childhood leukemia according to F.A.B. recommendations.**

Results of this study are compared with those of Hungarian and Dutch groups.

F.A.B. CLASSIFICATION		ALL			ANLL								TOTAL
		L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	
our group	NO:	80	30	3	1	13	20	5	5	2	--	*	159
	%	50	19	2	0.75	8	13	3	3	1.25	--	--	100
Hung. Study	NO:	143	83	3	--	14	10	2	8	4	3	--	270
	%	53	30	1	--	5	4	1	3	2	1	--	100
Dutch Study	NO:	46	39	2	--	1	5	--	4	3	--	--	100
	%	46	39	2	--	1	5	--	4	3	--	--	100

\* Two cases could not be differentiated as M<sub>1</sub> or M<sub>7</sub> with available facilities and were included in M<sub>1</sub>.

dren's Medical Center. 67% of patients suffered from acute lymphoblastic leukemia and 27% from acute non-lymphoblastic leukemia. The remaining were involved by various chronic leukemias including CML (4) CML in blastic crisis (1) and congenital leukemia (1).

In Table II the F.A.B. classification is adapted and the results are compared with two other reports from Hungarian group (270 cases)<sup>5</sup> and Dutch group (100 cases).<sup>6</sup>

## DISCUSSION

Comparing our results to those of Hungarian and Dutch groups there are statistically significant differences in frequency of myeloblastic and lymphoblastic leukemias using chi-square test for Hungarian group ( $X^2 = 11.11$ ,  $dF = 1$ ,  $P < 0.001$ ) and for Dutch group ( $X^2 = 22.88$ ,  $dF = 1$ ,  $P < 0.001$ ). It is concluded that although ALL is the most common childhood leukemia in Iran, its frequency is lower than that of European studies. ANLL is a little more prevalent. The appropriate percents are 71 and 29 respectively.

The lower incidence of ALL in Iran compared to foreign cases is due to lower incidence of L<sub>2</sub> forms.

Higher M<sub>1</sub> and M<sub>2</sub> frequencies are responsible for higher incidence of ANLL.

As we know L<sub>2</sub> forms of A.L.L. are usually of T-cell type or secondary to lymphoma and have a poorer prognosis. In other words lower incidence of L<sub>2</sub> and higher incidence of M<sub>1</sub> and M<sub>2</sub> doesn't alter significantly the response to therapy and prognosis and has only academic or epidemiologic value.

## REFERENCES

- Leventhal BG: Neoplasms and neoplasm-like structures. In: Behrman RE, Vaughan VC, eds. Nelson Textbook of Pediatrics Philadelphia: W.B. Saunders, 1079-109, 1987.
- Bennett JM, et al: Proposal for the classification of acute leukemia. Brit J Haematol 33:451, 1976.
- Bennett JM, et al: Criteria for the diagnosis of acute leukemia of megakaryocyte lineage (M7). Ann Intern Med 103:460, 1985.
- Viana MB, et al: Subclassification of acute lymphoblastic leukemia in children: analysis of the reproducibility of morphological and prognostic implications. Brit J Haematol 44:385-8, 1980.
- Kleti A, et al: Morphological diagnosis in childhood leukemia. Brit J Haematol 40:501-6, 1978.
- von Verling ER: Distribution of childhood leukemia according to the FAB classification. Brit J Haematol 43:482, 1979.