Acute Nonlymphoblastic Leukaemia in Adults

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Abstract

Fifty-four cases of adult acute non lymphoblastic Ieukaemia (ANIL) were studied. Their main symptoms were weakness and easy fatiguability (80%), fever (78%) and bleeding manifestation (48.38%). Our patients were younger (median age 34 years) and the disease was more advanced at the time of presentation than that seen in the West. FAB morphological classification of adult ANLL cases showed M2 (44.44%) the most predominant type followed by M4 (24%), MS and M6 were less common (3.7%). Majority of ANIL cases (68.51%) occurred up to the age of 40 years. Our results are comparable to European and consistent with Pakistani and Libyan studies (JPMA 43: 259, 1993).

Introduction

Acute non lyrnphoblastic leukaemia (ANLL) is a heterogeneous group of malignancies which does not spare any age group[1,2]. The distinction between acute lymphoblastic leukaemia (ALL) and acute non lymphoblastic leukaemia (ANLL) is of utmost significance as these disorders differ in age, choice of drugs, length of therapy, frequency of extramedullary manifestations and overall prognosis3-5. FAB classification fulfills the basic requisite for the assessment of distribution of cases of acute leukaemia[6,7]. FAB subtypes were studied by various workers in different age groups of either sex with special reference to the reproducibility and prognostic significance of various subtypes of both ALL and ANLL8,9. This study was designed to look for mode of clinical presentation and FAB distribution of adult ANLL cases.

Patients and Methods

Fifty-four consecutive cases of acute non lymphoblastic leukaemia (ANLL) were studied in the pathology department of Postgraduate Medical Institute, Lahore, prior to start of chemotherapy. Patients of either sex, above the age of 15 years irrespective of socioeconomic status were selected from various hospitals of Lahore. They were referred from peripheral districts of Punjab including Kasur, Khushab, Hafizabad, Gujrat, Gujranwala, Okara, Sahiwal and Sialkot. Informed consent was obtained from each subject or their guardians. The bone marrow aspiration was done from posterior iliac crest (PlC) or sternum with Salah's bone marrow aspiration needle. The peripheral blood films and bone marrow smears were stained with Giemsa stain for morphological evaluation by first and third authors. Total leucocyte count and platelet count were done by visual method using improved neubauer chamber. The cytochemical stains myeloperoxidase (POX), Sudan black B (SBB), chloroacetate esterase (CAE), alpha naphthyl acetate esterase (ANAE) and periodic acid Schiff (PAS) were carried out on peripheral blood\\ and bone marrow smears. Preparation of reagents and staining procedures were adopted as recommended by Dacie and Lewis[10]. The cases of acute leukaemia which showed block positivity with PAS and were negative to POX/SBB were excluded as given by FAB cooperative group criteria[7]. The ANLL cases M1-M3 were diagnosed by positive POX, SBB, CAE and M4 and MS by strongly positive ANAL enzymatic reaction. The dual esterase staining was helpful in identifying the myeloid and monocytic elements in M4 type of ANLL.

Results

Out of fifty-four ANLL cases 31 were males and 23 females; male to female ratio was 1.3:1. Ages of patients ranged from 16-60 years. Thirty seven cases (68.51%) were up to the age of 40 years (Table 1).

Table I. Age distribution of patients with ANLL.

Age (years)	Number
16-20	7
21-30	14
31-40	16
41-50	13
51-60	4
Total	54

In clinical history weakness and easy fatiguabiity (80%), fever (78%) and bleeding (48.38%) were main presenting complaints. Ml the patients of acute promyelocytic leukaemia (M3) presented with bleeding manifestations. On clinical examination pallor (78%), gum hyperplasia (12.9%), hepatomegaly (45%), splenomegaly (29%) and lymphadenopathy (35.48%) were noted. Haemoglobin was less than 100 g/lin 78% cases and it ranged from 16-135 g/l. TLC varied between 0.47 x 109/1 and 325 x 109/1 with leucopenia in four cases and normal counts in 11(20%). Blast cells in peripheral blood varied from 4% to 95% while no blast cells were seen in two cases of M2. All the six cases of M3 belonged to hyper-granular variant. FAB classification of cases is given in Table II.

Table II. Acute nonlymphoblastic leukaemia (ANLL) in adults.

FAB type	No.	%
M1	7	13.00
M2	24	44.44
M3	6	11.11
M4	13	24.00
M5	2	3.70
M6	2	3.70

Four patients died prior to start of any chemotherapy. Cause of death was disseminated intravascular coagulation in 2 (3.7%), acute renal failure in one intracranial haemorrhage in the other (1.8%).

Discussion

Acute leukaemias are classified according to the type of cell involved and the degree of differentiation[11]. The FAR cooperative group classification is now universally accepted as the basic morphological criteria to study different aspects of acute leukaemias[12]. It is an easy way to separate subtypes of ALL and ANLL[13]. The examination of both peripheral blood and bone marrow films is essential for the diagnosis and classification of acute leukaemias[14]. Proper application of cytochemical stains is of utmost importance for accurate characterization of leukaemic cells particularly in acute types and thus in determining therapy and evaluating prognosis[15,16]. In this study FAB typing of ANLL in adults showed M2 (44.4%) as the most predominant type with M4 (24%) the next, followed by M1 (13%) and M3 (11%). M5 and M6; each being 3.7% were less common (Table II). Male to female ratio of 1.3:1 is comparable to studies in Europe[8,16] and consistent with Libyan study[17]. Median age of 34 years and clinical manifestations of anaemia, weakness and bleeding are consistent with those of Raina et al[17]. Finding of fever in 78% is higher as compared to that of 34% and 28% reported by other workers[17,18]. Similar observations were reported in a previous study done at Lahore[19]. The late presentation of patients due to illiteracy and health consciousness and in turn delayed referral from peripheral areas of Punjab may be the reasons for advanced stage of the disease as four patients expired before the start of chemotherapy. The FAB distribution of ANLL has been extensively studied in the past decade[20-24]. The M2 has been the commonest type in all the studies except that of Mertelsmann et al and Vander Reijden et al[16,25]. Our finding of M2 as the commonest type in this study is comparable with 10 out of 14 studies (Table III-V).

Table III. Comparison of ANLL in adults according to various studies.

FAB Type	Enck et al (1976) n=93 %	Whittaker et al (1979) n=200 %	Foon et al (1979) n=56 %	Sultan et al (1980) n=250 %	Van Rhenen et al (1980) n=147 %	Present study n=54 %
M1	45	7	27	21	21	13
M2		63.5	28	32	32	44.44
M3	3	2.5	4	16	6.7	11.11
M4	43	17.5	23	16	9.7	24
M5	7	1.5	9	12	25.8	3.70
M6	2	8	0	3	4.8	3.70
			(7 unclassified)			

Table IV. Comparison of ANLL in adults according to various studies.

FAB type	Mertelsmann et al (1980) n=263 %	ECOG (1981) n=300 %	Marie et al (1982) n=51 %	Van der Reijden et al (1983) n=55 %	Present study n=54 %
M1	9.6	10	27.45	16.3	13
M2	29.4	30	39.20	29	44.44
M3	15.8	11	3.9	5.4	11.11
M4	8.5	37	25.5	7.2	24
M5	33.6	9	1.96	36.7	3.70
M6	3.1	3	1.96	5.4	3.70

Table V. Comparison of ANLL in adults according to various studies.

FAB type	Zittoun et al (1984) n=174 %	Iftikhar (1987) n=25 %	Raina et al (1990) n=54 %	Alvi et al (1990) n=26 %	Ahmad et al (1992) n=63 %	Present study n=54 %
M1	20	-	7	15.3	-	13
M2	50.7	48	57	35	55	44.44
M3	-	12	15	15.3	8	11.11
M4	19	32	13	19.2	20	24
M5	8.6	4	4	11.5	17	3.70
M6	1.7	4	4	3.7	-	3.70

Eight studies out of 14 have shown M4 as the next common type. Uncommon occurrence of M5 as the next common type, has been confirmed in 9 out of 14 studies. Similarly M6 has been the most rare type in all these studies. Therefore, FAB distribution of our ANLL cases is similar to most of the European studies and consistent with Pakistani studies from Lahore, Rawalpindi (northern areas) and Faisalabad[19,26,27]. Our study shows that FAB distribution of adult ANLL is in accordance with studies from western countries. Moreover, it emphasizes the need for improved health consciousness, early diagnosis and prompt referral.

References

1. Fialkow, PJ., Singer, J.W., Adsmson, J.W. et al. Acute non- lymphocytic leukaemia: heterogeneity of stem cell origin. Blood, 1981;57:1068-73.
2. Wictramasingbe, SN. Diaorders affecting leucocytea. In blood and bone marrow (systemic pathology; vol 2)3rd ed. Edinburgh, Churchill Livingatone, 1986, pp. 223-32.
3. Catovalcy, D. The classification of acute leukaernia. In therapyofacute leutaemiaa. In F. Mandelli eds. Proceedings of2nd international symposium, Rome, 1977, pp.35.42.
4. Lee, E.J., Pollak, A, Leavitt, RD. et at Minimally differentiated acute non-lymphocytic lcukaemia: a distinct entity. Blood, 1987;70:1400-1406.
5. Bernaaconi, C., Lazzarino, M., Salvaneachi, L. et at Acute monocytic and myelomonocyticleukaemiaa: frequencyand therapy. In therapyof acute leukaemias. F. Mandelli, ed. Lombordo, Ed., Rome, 1977; pp. 352-S&
6. Bennett, J.M., Catovsky, D., Daniel, M.T. et si. Proposals for the classification of the acute leukaemias (FAB Cooperative Group). Br.J. Hsematol., 1976;33:451-58
7. Bennett, J.M., Catovsky, D., Daniel, M.T. et at Proposed revised criteria for the classification of acute myeloid leukaemia: a report of FAkE Cooperative Group. Ann Intern. Med., 1985;103:626- 29.
8. Sultan, C., Deregnaucourt, J., Ko, Y.W. et at Diatribution of 250 cases of acute niyeloid leukaemia (AML) according to the FAR classification and response to therapy. Br.J. Haematot, 1981;47:545-51.
9. Keating, M.J., Smith, T.L., Gehan, LA. et al. A prognostic factor analysis for use n development of predictive models for response in adult acute leuk.acmia. Cancer, 1982;50:457-65.
10. Dacie, J.V., Lewis, S.M. and Cstovsky, D. Blood cell cytochemistry and supplementary techniques. In practical haematology. Edinberg, Churchill Livingstone, 1984, pp. 84-99.
11. Sun, T., Li, C.Y., Yam, L.T. Clinical applications. In Atlas of cytochemistry and immunochemistty of haemstologic neoplasms. Chicago, American Society of Clinical Pathologists. 1985; p. 66.
12. Enck, RE., Bauman, A.W. and Bennett, J.M. Adult acute leulcaemia: The Rochesttr (N.Y.)

experience. Arch. Intern. Med., 1976;136:1256-61
13. Rain, B. and Catovsky, D. Current concerns in haematology 2: classification of acute leuksemia. i.Clin.Pathol., 1990;43:882- 87.
14. Catovsky, D. eds. The leukaemic cell Edinburgh, Churchill Livingatone, 1981; p.37.
15. Li, CY., Yam, L.T. Cytochemical characterization of leukaemic cells with nunerous cytochemical granules. Mayo Clin. Proc., 1987;62:978-85.
16. Mertelamann, R., Thaler, H.T., Gee, T.S. et al. Morphological classification, response to therapy and survival in 263 adult patients with acute non lymphoblastic leukaemia. Blood 1980:56:773-81.
17. Rains. V., EI-Habhash. K.I. and Tenkovsky. In acute non lymphoblastic leukaemia in adults: experience in Tripoli, Libya. Ann. Saudi Med., 1990; 10(3):299-302.
18. Kansal, V., Omura, G.A. and Soong. Si. Prognosis in adult acute myelogenous leukaemia related o performance status and other factors. Cancer, 1976;38:329-34.
19. Iftikhar, A. Clinicom phological study of acute leukaemias (thesis). Lahore, Pakistan, University of Punjab., 1986, pp. 116-20.
20. Van Rhenen, J., Verhulst, J.C., Huijgens, P.C. et al. Maturation index: a contribution to quanntification in the FAB classification of acut leukaemia. Br.J. I Iaematol., 1980;10:581-86,
21. Foon, K., Nalem, F., Yab, C. et a!. Acute myelogenous leukaemia, morphology, classification and response to therapy. Leuk. Res., 1979;3: 171-73.
22. Whittaker, J.A., Withev., J., powell, D.E.B. et a!. Leukaemia classification: a study of the accuracy of diagnosis in 456 patients Br.J. Haematol., 1t910;41: 177-84,
23. Bennett, 3M. and Begg. C.B> for the Eastern Cooperative Oncologyy Group (ECOG). Study of the cytochetnistry of adult acute myeloid ieukaemia by correlation of subtypes with response and survival. Eastern Cooperative Oncology Group. Cancer Res., 1981:41:4833-37.
24. Marie,3.P., Perrol,J.Y., Boucheix, C. et al. Determination of ultrastructural peroxidases and Immunologic membrane markers in the diagnosis of acute leukaemias. Blood, 1982;59:270-76.
25. Van der Reijden, Hi., Van Rhenen, D.J., Lansdorp, P.M. et at. A comparison of surface marker analysis and FAB classification in acute myeloid Ieukaemia. Blood, 1983;61:423-48.
26. AM, E.A., Saieem, M., Ahmed, P. etal. A study of hundred cases of acute leukaemia in northern Pakistan with reference to PAR Cooperative Group Classification. PiP., 1990:1:87-92.
27. Ahmad, J., Hashmi, MA. Naveed, LA. et at. Spectrum of malignancies in Faisalabad 1986-90. P.J.P., 1992:3(2):103-10.