Summary and Conclusions

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Telomerase enzyme directs the de novo synthesis of telomeric repeats at chromosomal ends thus maintaining the length of telomeres and conferring an immortal phenotype and proliferation advantages to malignant cells.

Progressive telomere shortening is halted in cancer cells by the presence of telomerase enzyme, allowing cells to divide indefinitely. Telomerase activity has been detected in various types of malignancy including those of the haematopoietic limeage.

The aim of the present study is to asses telomerase activity in AML patients and correlate it with other laboratory investigations.

This study included 25 patients with newly diagnosed AML cases, evaluation of telomerase activity (TA) was done on peripheral blood (PB) samples of patients collected before induction of chemotherapy and was compared to 15 age and sex matched controls.

Determination of TA was based on the TRAP assay. Modification of this method was done using PCR-ELISA technique.

In the present study we found that:

- The mean level of TA in AML patients was higher than that of normal controls.

- Telomerase activity were elevated in 21 of 25 AML patients (84%).
- There was no significant difference between cases with high relative telomerase activity (RTA) and cases with low and intermediate RTA as regards mean age, sex, platelets and CD34+ blast cells.
- There was significant difference between cases with high RTA and cases with low and intermediate RTA as regards Hb level, total leukocytic count, blasts in peripheral blood and blasts in bone marrow.
- According to FAB classification, there was significant difference in RTA values between FAB subtypes of AML cases. In M_3 cases, no one case exhibited high RTA level.
- While there was no statistical significant difference between FAB subtypes of AML cases as regards high RTA and low and intermediate RTA levels.

Recommendation

- Further studies of telomerase enzyme and its related subunits are recommended to clarify the biological significance of their elevations in acute leukaemia.

Table (11): General characters and laboratory data of control group

	Age (years)	Sex	Hb (g/dL)	TLC $X10^3$/uL)	Platlets $X10^3$/uL)
1	32	F	10.00	6.20	150
2	20	M	11.00	5.30	175
3	26	F	9.50	7.10	225
4	41	F	12.40	8.00	250
5	54	M	13.00	9.20	165
6	24	F	10.50	5.80	234
7	37	M	11.50	6.00	190
8	48	M	9.80	8.10	200
9	55	M	12.20	9.00	250
10	27	F	13.00	7.20	195
11	35	M	9.00	6.80	176
12	44	M	10.50	5.90	180
13	39	F	11.80	7.00	190
14	60	M	12.30	8.60	210
15	23	M	12.50	9.00	230
Min	20		9	5.3	150
Max	60		13	9.2	250
Mean	37.94		11.24	7.28	201.18
S.D.	12.62		1.32	1.30	30.83

Table (12): General Individual and laboratory data of AML cases

	Age years	Sex	Hb (g/dl)	TLC (X103/ mm3)	Platelets (X103/ mm3)	Blast PB (%)	Blast BM (%)	Immunop-henotype	CD34 +ve blast cells (%)	FAB	RTA
1	15	M	9.9	156.0	584	80	100	CD13, CD33	81.0	M1	171.3
2	30	M	4.1	2.1	30	27	36	CD13, CD33	74.0	M1	12.5
3	29	M	7.5	9.7	25	60	60	CD13, CD33	43.0	M3	3.2
4	52	M	8.5	8.3	37	25	39	CD13, CD14, CD33	35.0	M5	3.5
5	73	M	8.0	8.2	172	72	32	CD13, CD33	80.0	M1	14.7
6	30	F	6.4	90.0	24	79	30	CD13, CD14, CD33	50.6	M2	11.5
7	35	F	9.5	5.2	123	20	34	CD13, CD14, CD33	40.0	M4	2.1
8	37	M	8.0	16.0	154	40	33	CD13, CD33	32.0	M2	6.8
9	50	M	6.6	12.2	180	74	38	CD13, CD33	29.0	M3	1.6
10	17	F	7.5	69.3	51	36	96	CD13, CD33	60.0	M2	2.1
11	20	F	7.3	18.8	30	30	82	CD13, CD14. CD33	38.0	M5	7.7
12	16	M	6.8	25.3	43	51	60	CD13, CD33	73.0	M2	2.4
13	33	F	5.0	40.2	16	75	60	CD13, CD33	37.0	M1	14
14	30	M	4.8	2.6	64	20	89	CD7, CD13, CD33	-	M1	10.4
15	37	F	7.0	125.5	45	72	90	CD13, CD33	56.5	M2	100
16	30	F	6.0	268.5	276	70	90	CD7, CD13, CD33	92.0	M1	100
17	20	M	5.9	12.0	25	91	30	CD9, CD13, CD22, CD33	8.0	M1	16
18	60	F	6.0	35.0	33	65	34	CD19, CD13, CD33	17.0	M2	9.4
19	50	M	7.5	6.3	37	96	99	CD7, CD13, CD14, CD33	28.0	M4	148.6
20	25	F	5.2	117.6	16	96	100	CD13, CD33	30.0	M1	202.7
21	64	F	4.8	2.6	64	20	89	CD7, CD13, CD33	-	M2	5.6
22	47	M	10.0	98.5	50	80	100	CD13, CD33	34.0	M2	391
23	17	M	8.0	140.1	23	60	90	CD13, CD14, CD33	46.0	M4	456
24	37	F	6.7	33.4	20	9	87	CD13, CD33	23.0	M3	2.1
25	25	F	7.5	6.3	37	25	34	CD7, CD13, CD33	28.0	M2	2.8
Min	15		4.1	2.1	16	9	30		8		1.6
Max	73		10	268.5	584	96	100		92		456
Mean	35.16		6.98	52.39	86.36	54.9	65.3		45.00		67.92
S.D.	15.82		1.57	66.30	122.31	27.2	28.4		22.33		122.3