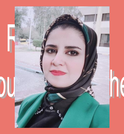
Serum Hyaluronic Acid and Ferritin Levels in Children with Acute Lymphoblastic Leukemia

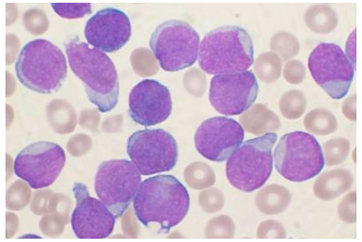
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Abstract

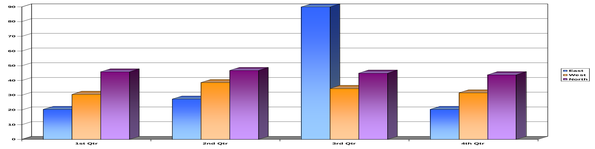
Serum levels of Hyaluronic acid and ferritin are high in newly diagnosed children with Acute Lymphoblastic Leukemia.



Background

Acute lymphoblastic leukemia is the most common form of cancer (25–30%) and the predominant subtype of leukaemia (75–80%) in children. It represents a malignant expansion of immature lymphoid cells, that results from multi-step genetic changes in a single lymphoid progenitor cell. Hyaluronic acid is a non sulfated glycosaminoglycan. It is found mainly in the extracellular matrix (ECM), especially of the loose connective tissue, including the bone marrow. HA influences many processes such as angiogenesis, and the growth and migration of cells. HA levels are elevated in various types of cancer including AML, lung and breast cancers but their prognostic significance is unclear. Ferritin is the primary iron storage protein. High concentrations of ferritin are found in the cytoplasm of the reticuloendothelial system; the liver, spleen and bone

Objective

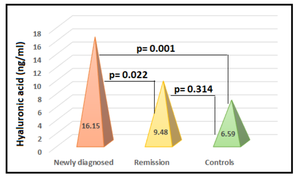


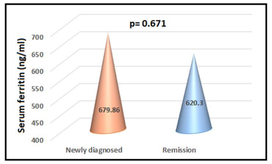
To evaluate the level of serum hyaluronic acid and ferritin in patients with ALL at diagnosis and in remission and investigate their impact on disease development and prognostic.

A total of 60 subjects were enrolled in this study, 40 patients of ALL as cases (20 patients at diagnosis before starting chemotherapy and 20 patients in remission but still under therapy); and 20 age and sex-matched healthy subjects as controls. Both B- and T-ALL subtypes were included. The age was less than 15 years.

The diagnosis of ALL was based on morphological assessments of the stained PB and BM smears according to the standard French-American-British criteria and confirmed by cytochemical stains and flow cytometric immunophenotyping. Patients with complete remission were also evaluated by morphological examination. Serum HA was measured using a commercially available sandwich ELISA kit while serum ferritin was measured by an immunoassay analyzer.

Materials & Methods





Variable	HA		Ferritin		LDH	
	r	p-value	r	p-value	r	p-value
Age	0.037	0.822	0.004	0.980	0.174	0.327
Hemoglobin	0.069	0.773	-0.04	0.867	0.348	0.133
Platelets	-0.193	0.415	-0.247	0.294	-0.025	0.918
WBC	-0.104	0.663	-0.380	0.099	0.315	0.176
Blast	0.081	0.734	-0.167	0.480	0.295	0.207
LDH	**0.551**	**<0.001**	0.159	0.327		
Ferritin	**0.670**	**<0.001**				

Summary

Serum HA in newly diagnosed patients with ALL was significantly higher than either patients in remission (P-value 0.022) or controls (P-value 0.001).

Both newly diagnosed patients and those in remission had elevated levels of serum ferritin with no significant difference. Serum levels of HA correlated positively with both serum ferritin and LDH (p<0.001). Our data suggest that serum level of hyaluronic acid could have a role in the malignant process of ALL and may serve as a possible marker for aggressiveness.

Discussion

Increased levels of serum hyaluronic acid in newly diagnosed ALL patients could be due to increased synthesis by the stromal fibroblasts under the effect of tumour cells, or decreased HA elimination due to alterations in hepatic blood or lymph flow. Possible factors that are likely to contribute for raised serum ferritin levels in ALL patients in remission could be infection, iron overload, and chemotherapy.

References

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