soho2023
ELEVENTH ANNUAL MEETING

A COMPARISON OF SERUM IMMUNOGLOBULIN LEVELS AMONG PEDIATRIC ACUTE LEUKEMIAS

Dr. Ayşe Ceyda ÖREN[1], Dr. Esra PEKPAK ŞAHİNOĞLU[1], Dr. Sinan AKBAYRAM[1]

1. Gaziantep University, Division of Pediatric Hematology and Oncology

GAZİANTEP ÜNİVERSİTESİ TIP FAKÜLTESİ

INTRODUCTION

Varying degrees of immunologic defects are common features in all types of leukemia. To date humoral immunity has ben evaluated in pediatric acute lymphoblastic leukemia (ALL) patients, and no spesific pattern of immunoglobulin levels could be identified between different types of leukemia. In the literature previous studies have been evaluated the serum immunglobulin levels in ALL. In our study, we aimed to compare the initial serum immunglobulin levels between pediatric ALL and acute myeloid leukemia (AML) patients. To our knowledge;this is the first study in our country which researches serum immunoglobulin levels between pediatric ALL and AML patients.

AIM

To compare the initial serum immunglobulin levels between pediatric ALL and AML patients.
This is the **first** study in our country which researches serum immunoglobulin levels between pediatric ALL and AML patients.

METHOD

Gaziantep University, Division of Pediatric Hematology and Oncology
June 2017- March 2023
260 pediatric acute leukemic patients
Written informed consent (+)
Statistical analysis:
- The Shapiro-Wilk test → Sperarman rank correlation analysis
- The Chi-square test → correlation between two independent categorical variables
- The Bonferroni test → multiple comparison variables

Serum Ig G, A and M levels - turbidimetric immunoassay method.

RESULTS

215 ALL (36 T cell + 179 B cell) + 45 AML patients
141 male + 119 female
Median age of 64 months (1- 219 months) at time of initial diagnosis

	n	Med ± Std. Deviation	Median (Min-Max)
IgG (mg/dl)	260	935,5 ± 378,11	890 (100 - 2420)
IgM (mg/dl)	260	97,68 ± 57,92	89 (10 - 417)
IgA (mg/dl)	260	113,85 ± 80,69	90 (4 - 678)

		n	%
IgG	Low	20	7,7
	Normal	211	81,2
	High	29	11,2
IgM	Low	37	14,2
	Normal	213	81,9
	High	10	3,8
IgA	Low	8	3,1
	Normal	232	89,2
	High	20	7,7

		ALL n(%)	AML n(%)	p
IgG	Low	17 (7,9)	3 (6,7)	0,001*
	Normal	183 (85,1)	28 (62,2)	
	High	15 (7)	14 (31,1)	
IgM	Low	30 (14)	7 (15,6)	0,520
	Normal	178 (82,8)	35 (77,8)	
	High	7 (3,3)	3 (6,7)	
IgA	Low	7 (3,3)	1 (2,2)	0,010*
	Normal	197 (91,6)	35 (77,8)	
	High	11 (5,1)	9 (20)	

		ALL (A)	AML (B)
IgG	Low		
	Normal	B (p= 0,001)	
	High		A (p=0,001)
IgA	Low		
	Normal	B (p=0,006)	
	High		A (p=0,001)

		ALL		
		B cell n(%)	T cell n(%)	p
IgG	Low	12 (6,7)	5 (13,9)	0,384
	Normal	154 (86)	29 (80,6)	
	High	13 (7,3)	2 (5,6)	
IgM	Low	23 (12,8)	7 (19,4)	0,376
	Normal	151 (84,4)	27 (75)	
	High	5 (2,8)	2 (5,6)	
IgA	Low	6 (3,4)	1 (2,8)	0,270
	Normal	166 (92,7)	31 (86,1)	
	High	7 (3,9)	4 (11,1)	

		AML n (%)	B cell- ALL n (%)	T cell- ALL n (%)	p
IgG	Low	3 (6,7)	12 (6,7)	5 (13,9)	0,001*
	Normal	28 (62,2)	154 (86)	29 (80,6)	
	High	14 (31,1)	13 (7,3)	2 (5,6)	
IgM	Low	7 (15,6)	23 (12,8)	7 (19,4)	0,569
	Normal	35 (77,8)	151 (84,4)	27 (75)	
	High	3 (6,7)	5 (2,8)	2 (5,6)	
IgA	Low	1 (2,2)	6 (3,4)	1 (2,8)	0,019*
	Normal	35 (77,8)	166 (92,7)	31 (86,1)	
	High	9 (20)	7 (3,9)	4 (11,1)	

		AML (A)	B cell- ALL (B)	T cell- ALL (C)
IgG	Low			
	Normal		A (,001)	
	High	B (,000) C (,012)		
IgA	Low			
	Normal		A (,009)	
	High	B (,001)		

CONCLUSIONS

According to literature, high levels of immunoglobulin expression predicts shorter overall survival in patients with acute myeloid leukemia and it is suggested using immunoglobulin levels as a useful marker for prognostic strafication and target therapy. In another study, baseline low immunoglobulin A levels are recommended as a predictor for inferior disease-free survival in pediatric acute myeloid leukemia.
We found that AML patients have higher IgG and IgA levels. In the next study, we are also planning to evaluate the relationship between immunoglobulin levels and leukemia surveys.

REFERENCES

- Turkish Pediatric Onkology Group (TPOG) / Turkish Pediatric Hematology Society (TPHD) Pediatric Tumor Registery, 2002-2022.
- Joshi SH, et al. Levels of the IgG immunoglobulin and immunoglobulin marker Gm in leukaemias. J Postgrad Med 1980;26:86-9.
- Bansal AK, et al. Baseline low immunoglobulin A predicts inferior disease-free survival in pediatric acute myeloid leukemia and serial evaluation suggests role of immunoglobulin A in leukemogenesis Leukemia & Lymphoma. May 2014;55(5):1132-38.
- Wu I, et al. High levels of immunoglobulin expression predict shorter overall survival in patients with acute myeloid leukemi. Eur J Haematol. 2020;105:449–459.

ACKNOWLEDGEMENTS

We are thankful of the staff in **Division of Statistic** of Gaziantep University for their kind cooperation.

CONTACT INFORMATION

Dr. Ayşe Ceyda ÖREN

Gaziantep University School of MedicineDepartment of Pediatric Hematology-OncologyGaziantep, Turkey

ceydaoren@gantep.edu.tr