

Serum Immunoglobulin Levels in Giardiasis

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Introduction

Giardiasis is a common disease of the small intestine of man caused by the flagellated protozoan parasite. The influence of host immunity on infection and on modulating its clinical course remains uncertain. Infection in some hosts may be short lived and spontaneously self-limited¹, while in others it may result in prolonged debilitating illness². Though specific antibody response occurs in the host following *G. lamblia* infection, the immune alteration especially at the gut level which allows the parasite to colonize, multiply and damage the brush border membrane are ill understood. Local immune factors responsible for elimination of parasite are not clear³. Susceptibility to giardiasis has been closely related to the immunological status of the host⁴. Increased incidence of giardiasis has been reported in adults having low levels of immunoglobulins⁵⁻⁷. This study was done to determine serum immunoglobulin levels in giardiasis.

Patients, Methods and Results

Sixty-six adults (males 38, females 28) reporting with abdominal pain and persistent diarrhoea and diagnosed on stool examination positive for *O. lamblia* were included in the study.

The control group consisted of 34 apparently healthy subjects (Males 23, Females 11) with stool negative for parasite. Blood samples were collected and serum samples stored at -20°C. Total serum immunoglobulins IgM, IgG and IgA were determined by Radial Immunodiffusion method (Binding Site Ltd., U.K.) and total serum IgE by ELISA method (Melotec IgE kit). Results indicate that IgM and IgG were higher and IgA lower in patients as compared to controls (Table I).

Table I. Total Serum Immunoglobulins by Radial Immunodiffusion method.

Immunoglobulins	Patients (66)		Controls (34)		P value ✓
	Mean ✓	SD ✓	Mean	SD	
Immunoglobulin M	4.19	1.9	2.08	1.5	P<0.01
Immunoglobulin G	19.3	7.07	13.7	2.92	P<0.01
Immunoglobulin A	2.55	1.52	3.24	1.28	P<0.05

Difference between patients and controls is significant.

Total Serum IgE levels were not significantly different in patients and controls (Table II).

Table II. Total Serum Immunoglobulin E by ELISA method.

Group	IgE (IU/ML)	
	Uptil 150	>150
	No (%)	No (%)
Patients (50)	20 (40)	30 (60)
Controls (30)	12 (40)	18 (60)

Decreased levels of all immunoglobulins were found in chronic carriers (Table III).

Table III. Immunoglobulins in chronic Giardia Patients.

	Total cases =8	
	> Normal range	< Normal range
Immunoglobulins M	6	2
Immunoglobulins G	1	7
Immunoglobulins A	2	6
Immunoglobulins E	1	7

Comments

In the present study, serum IgM and IgG were high while low levels of IgA were observed in patients as compared to controls. Total serum IgE was found to be similar in both groups. Other reports indicate normal levels of total serum IgO and IgM^{8,9}. Although IgA deficiency does occur but reduced levels of IgA alone are not associated with increased susceptibility to giardiasis or severity of symptoms¹⁰. Serum IgE was found to be significantly higher in patients with giardiasis than in controls and recovery from giardiasis was correlated by a decrease in serum IgE levels¹¹ while other reports indicate that *G. lamblia* infection was not related to difference in serum IgE levels¹²⁻¹⁴.

O. lamblia is being reported as a frequent cause of chronic diarrhoea¹⁵. In the present study, decreased levels of all immunoglobulins were found in chronic cases while other reports indicate increased total serum immunoglobulins in patients with persistent diarrhoea and giardiasis¹⁶.

Hypogammaglobulinemia and giardiasis may occur together but difference from normal levels of any immunoglobulin did not seem to explain either the presence of giardiasis or the variability of its clinical features. Individuals with lower immunoglobulin levels are not at greater risk of acquiring giardiasis than those with higher immunoglobulin concentrations¹⁰, but the immunodeficient individuals once infected are much more likely to have an infection that results in symptoms¹⁷. It appears that serum immunoglobulins (IgM, IgG, IgA) have some relationship with giardiasis especially in chronic cases

and a decrease in immunoglobulins may contribute to *O. lamblia* infection.

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