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### SEROPREVALENCE OF AMOEBIASIS IN A TERTIARY CARE HOSPITAL

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**Abstract: Introduction:** Infection due to *Entamoeba histolytica* (*E. histolytica*) is one of the major health problems in developing countries. Demonstration of circulating antibodies to *E. histolytica* is widely used as a marker of immunodiagnosis for amoebiasis. The present study was carried out to determine the seroprevalence of amoebiasis and relationship between sex, age and *E. histolytica*. **Material and methods :** During one year retrospective study period, 168 serum samples from suspected cases of amoebiasis were collected. All sera were tested for presence of IgG antibodies against *E. histolytica* using ELISA method. **Results:** Out of 168 suspected patients, 94 were positive for IgG antibodies against *E. histolytica* by ELISA. The overall prevalence of *E. histolytica* was 55.9%. Among the seropositive cases, majority were males and in the age group of 31-40 years (23.4%). Infection was more prevalent in male hosts (57.5%) as compared to female hosts (50%) and had highest prevalence (100%) in age group of 0-10 years. **Conclusion:** Serological surveys may help to determine the endemicity of the disease. Infection of *E. histolytica* was more prevalent in male hosts and in children.

**Keywords:** Age, ELISA, *Entamoeba histolytica*, Seroprevalence, Sex



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## INTRODUCTION

Amoebiasis is caused by the intestinal protozoan parasite *Entamoeba histolytica* (*E.histolytica*). It is the third leading parasitic cause of death in humans after malaria and schistosomiasis. Globally, it is responsible for 40000–100000 deaths a year.<sup>1</sup> It is distributed worldwide and poses an especially serious health threat in tropical and subtropical developing areas<sup>2</sup> and it is also a problem in the developed world in travelers, immigrants, and men who have sex with men.<sup>3</sup> The prevalence of *E. histolytica* infection differs from one geographic area to another, and severity varies from one case to another.<sup>4</sup> The prevalence of amoebiasis varies with the population of individuals affected, differing between countries and between areas with different socioeconomic conditions. Up to 50% of the population is affected in regions with poor sanitary conditions.<sup>5</sup> Most often, infection is symptomless but in approximately 10% of human hosts, invasion to gut mucosa and extra intestinal sites lead to dysentery, amoebic liver abscess, pulmonary abscess and involvement of other organs.<sup>6</sup> In spite of effective treatment against amoebiasis, morbidity and mortality due to amoebic infection is being reported which suggests ways to be find out for limiting or eradicating the disease. By inoculation of live or fixed trophozoites, the evolution of the hepatic lesion and the participation of some humoral factors in the development of hepatic amoebic lesion was studied.<sup>7</sup> Humoral and amoebicidal cell mediated immune responses have been documented in patients recovering from invasive *E. histolytica* infection.<sup>8</sup> Serological tests are valuable adjuncts to the diagnosis and epidemiology of amoebiasis.<sup>9</sup> So keeping in view the importance of this parasite, the present study was designed to study the seroprevalence of amoebiasis and relationship between sex, age and *E.histolytica*.

## MATERIALS AND METHODS

This retrospective study was undertaken for a period of one year from January – December 2012. Serum samples (n=168) were collected from all clinically suspected patients of amoebiasis admitted in various wards and ICU's and those visiting OPD. The serum samples were assayed by enzyme linked immuno sorbent assay (ELISA) to detect IgG antibodies against *E. histolytica* using RIDASCREEN ELISA kit according to manufacturer's instructions. Reading was taken by ELISA reader at 450 nm. Samples with Index value of <0.9 was taken as negative whereas Index value of >1.1 was taken as positive. The data was collected on the basis of age and sex. Data obtained from the study was analysed by statistical analysis and p value of < 0.5 was taken as statistically significant.

## RESULTS

Out of 168 serum samples obtained from the suspected patients in this study, 132(78.5%) were males whereas 36(21.5%) were female patients. 94 were positive for antibodies against *E.*

histolytica. An overall prevalence of 55.9% (94/168) was observed in clinically suspected cases of amoebiasis. Among the seropositive cases, majority were males and in the age group of 31-40 years (23.4%) (Figure 1). Relationship between sex and *E. histolytica* showed that infection was more prevalent in male hosts (57.5%) as compared to female hosts (50%) (Table 1). However the difference was statistically non-significant ( $P>0.05$ ). Relationship between age and *E. histolytica* revealed that parasite had highest prevalence (100%) age group of 0-10 years and lowest prevalence (28.6%) in age groups of 11-20 and 71-80 years (Table 2).

## DISCUSSION

Diagnosis of amoebiasis is still a problem in many clinical laboratories. False positive results due to misidentification of macrophages and non pathogenic species of *Entamoeba* is a drawback of microscopical diagnosis.<sup>10</sup> Thus serological diagnosis seem to be a suitable alternative for the diagnosis of amoebiasis. Several serological assays have been used for the diagnosis of amoebiasis among them ELISA has received the most attention.<sup>11-14</sup> Other methods which could be used to analyse the prevalence of amoebiasis include the Western blot with more purified antigens.<sup>15</sup> Methods searching for parasite elements such as the polymerase chain reaction could be more useful for prevalence surveys. These methods are expensive and time-consuming, making them impractical for epidemiological surveys.<sup>16</sup>

The overall sero-prevalence was 55.9% whereas prevalence of 4.49%.<sup>17</sup>, 26%<sup>18</sup>, 83.3%.<sup>19</sup> in suspected cases of amoebiasis was reported in literature.

Results of our study indicated higher prevalence in male hosts (57.5%) as compared to female hosts (50%) and maximum prevalence of amoebiasis was observed in children. This is in contrast to a study done in Mexico in which, higher prevalence was found in females and in adults.<sup>17</sup>

Table 1. Antibodies against *E. histolytica* determined by ELISA: distribution by sex

	Positive	Negative	Total	% age positivity
Male	76	56	132	57.5%
Female	18	18	36	50.0%
Total	94	74	168	55.95%

Table 2. Antibodies against *E. histolytica* determined by ELISA: distribution by age

Age Group	Total Cases	Positive	Percentage (%)
0-10	2	2	100
11-20.	7	2	28.6
21-30.	22	15	68.1
31-40	34	22	64.7
41-50	39	15	38.5
51-60	30	20	66.7
61-70	20	14	70.0
71-80	14	4	28.6

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