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Reliability of IHA Test as a Diagnostic Tool of Some Parasitic Infections

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Abstract

Human sera were collected from parasitologically proven cases of Schistosomiasis, Echinococcosis, Fascioliasis and Toxoplasmosis. Using Echinococcus IHA reagent against these sera showed cross reaction with Fasciola sera (3.4%) and Schistosoma sera (6.25%). Using Leishmania IHA reagent against the same sera showed cross reaction against Toxoplasma sera only (6.8%).

Introduction

ONE of the main disadvantages of serological tests is cross reactivity that leads to false positive reactions. This cross reactivity is big among parasites of the same group (e.g. Schistosoma and Fasciola) and also between different groups (e.g. Schistosoma and Echinococcosis). Therefore, in endemic areas like Egypt, polyparasitism is prevalent and in turn cross reactivity is expected to be high.

Moreover, complexity of antigens in general and parasitic specially leads to cross reactivity. Sera from patients with chagas disease, malaria, toxoplasmosis and amoebiasis will react with crude undefined antigens of leishmania [1].

The majority of Egyptian reports about echinococcosis based their diagnosis on Casoni test or IHA test or both [2,3]. They reported that the use of hydatid cyst fluid antigen of unknown protein content is a very essential factor as regards cross reactivity with other parasitic infections

Njeruth et al [4], considered IHA test as the method of choice having an average sensitivity of 84%.

The present work aimed to evaluate the specificity of IHAT as a tool for seroepidemiological studies on echinococcosis and leishmaniasis, where some parasitic diseases occur.

Material and Methods

This work was conducted on 94 parasitologically proven cases of fascioliasis (28 cases), hydatidosis (9 cases), schistosomiasis (30 cases) and toxoplasmosis (27 cases). Serum was collected from each case and stored at -20 °C.

Echinococcus IHA reagent was used with Echinococcus positive and negative

control serum. Also Leishmania IHA reagent was used with positive and negative control sera. These reagents were processed for use according to the directions given by the manufacturers (Cellognost reagents of Behring Institute, W. Germany).

Results

The results are illustrated in tables 1 and 2.

Table (1): The Results of IHAT of Different Human Sera Cross React of Anti-echinococcus Antibodies.

Parasite	Total No. of cases	False positive	% of false positive	No. of negative
Echinococcus	9	--	0%	--
Fasciola	28	1	3.4%	27
Schistosoma	30	2	6.25%	28
Toxoplasma	27	--	0%	27

Table (2): The Results of IHAT of Different Human Sera Cross React for Anti-leishmania Antibodies.

Parasite	Total No. of cases	False positive	% of false positive	No. of negative
Echinococcus	9	--	0%	9
Fasciola	28	--	0%	28
Schistosoma	30	--	0%	30
Toxoplasma	27	2	6.8%	25

Discussion

Indirect haemagglutination test has been used by many workers in different areas of the world for the immunodiagnosis of human diseases. This is because it is the easiest and most efficient screening procedure particularly for large scale surveys in active surveillance [5].

In the present study, the different patient sera showed some false positive reactions using Echinococcus IHA reagent. One case with fascioliasis and two cases with Schistosomiasis showed false positive reaction. The same results were observed by Ben-ismail and Carme [6] who found that 14% IHA were false positive in sera of patients with *F. hepatica*. Cross reactions are partly a result of the fact that some Echinococcus antigenic components are common to many helminths [7]. Also, hydatid fluid may contain proteins of host origin and other non-specific antigens. Among the non-specific antigens is one with blood group P1 activity; and since some parasites including *F. hepatica* have P1 activity, cross reaction in serologic tests for echinococcosis frequently occurs with sera of patients with liver fluke infection [8].

Also, the same results coincided with the results given by Abd El-Aal [9] who reported cross reaction between 11 cases of *S. mansoni* and sera of Echinococcus infected patients using IHA test.

As regards IHA test using leishmania antigen, cross reaction was observed with two cases of toxoplasmosis. This agreed with the findings of Morsy and Michael [10] who found cross reaction between sera of *Leishmania* cases and sera of experimentally infected rats with *T. gondii*.

One could conclude that IHAT is a good serodiagnostic tool and may be more preferable than other serological tests as IFAT, ELISA [11] and Dot-ELISA especially in minimally equipped laboratories. The percentage of cross reaction is considered of minimal importance especially that most antiparasitic drugs are safe nowadays and cause no serious harm if given to a false positive patient.

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