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CROSS REACTIONS BETWEEN SOME HELMINTHES INFESTING MAN AND ANIMALS

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ABSTRACT ❐ Using double diffusion test, cross reactions were detected between Schistosoma mansoni and each of Fasciola gigantica and Setaria equina adult worms antigens. Whole hydatid fluid antigen and hydatid antigens (4&5) reacted seperately with Schistosoma mansoni; Fasciola gigantica and Setaria equina adult worms. No cross reactions were detected between hydatid antigen (5) and other mentioned helminthes.

INTRODUCTION

The diagnosis of helminth infections by using serological tests is difficult due to the presence of common antigens in most of these helminthes (Desclens et al., 1961; Tada and Kawashima, 1964; Duxbury and Sadun, 1967 and Neppert, 1974). Mannweiler (1980) mentioned that the difficulties in evaluating serodiagnosis of helminth infections (Schistosomiasis, Filariasis, Hydatidosis) were due to the occurence of cross reactions.

The present study was carried out to detect the cross reactions between some common helminth parasites and each of Schistosoma mansoni antigen and hydatid cyst fluid antigens.

MATERIAL AND METHODS

(A): Preparation of antigens:

1. Whole hydatid fluid antigen:

The hydatid fluid was obtained from camel hydatid cysts, the fluid was aspirated aseptically then, centrifuged at 3000 r.p.m. for 5 minutes. The supernatant was collected, one drop 1/10000 merthiolate was added to each 1 ml of the collected material and then, kept frozen at -20°C till use.

2. Hydatid antigens (4&5) mixtyre and hydatid antigen (5):

This was done adopting the technique of Nusiani et al. (1987).

3. Schistosoma mansoni antigen:

The adult worms were recovered from the mesentric veins of mice. The adult worms were washed several times with saline and were homoginized in a homogenizer using PBS (PH 7.2). The homogenate was then centrifuged at 5000 rpm and the supernatant fluid was collected and kept frozen at -20°C.

4. Fasciola gigantica antigen:

The adult worms were obtained from the bile ducts of infested cattle sloughtered at Cairo abattoir. The antigen was prepared similarly as in case of Schistosoma mansoni antigen.

5. Setaria equina antigen:
Adult worms of Setaria equina were recovered from abdominal cavities of infested donkeys sloughtered in Cairo Circus. This antigen was prepared as that of Schistosoma mansoni antigen.

(B): Preparation of antisera:
Hyperimmune sera against whole hydatid fluid antigen, hydatid antigens (4&5) mixture, hydatid antigen (5) and Schistosoma mansoni antigen were prepared seperately in rabbits according to the method of Derhalli et al. (1989).

(C): Cross reactions:

1. Between Schistosoma antiserum and hydatid cyst fluid antigens:
This was done by the double diffusion test (Ouchterlony and Nilsson, 1973).
Hyperimmune serum prepared against Schistosoms antigen was allowed to diffuse in the agar gel against each of the whole hydatid fluid antigen, hydatid antigens (4&5) mixture and hydatid antigen (5).

2. Cross reactions between hydatid cyst fluid antigens and other worms:
This also was done by double diffusion test between the hyperimmune sera prepared against each of whole hydatid fluid antigen, hydatid antigens (4&5) mixture and hydatid antigen (5) on one side against Fasciola gigantica antigen and Setaria equina antigen on the other side.

3. Cross reactions between Schistosoma antiserum and other worms:
The Schistosoma antisera was tested against Fasciola gigantica antigen and Setaria equina antigen by the double diffusion test.

RESULTS

In agar gel, the precipitaion lines were detected between the rabbit anti-schistosoma hyper-immune serum and each of whole hydatid fluid antigen and hydatid antigens (4&5) mixture, but no lines appeared between anti-schistosoma serum and hydatid antigen (5).
Also, the antisera prepared against whole hydatid fluid antigen and hydatid antigens (4&5) mixture gave reactions with the worm antigens of Fasciola gigantica and Setaria equina.
The precipitaion lines were not detected between rabbit anti-hydatid antigen (5) hyper immune serum, and the antigens of Fasciola gigantica and Setaria equina adult worms antigen.
At the same time, precipitation lines were seen between the anti-Schistosoma hyper-immune serum when tested against each of Fasciola gigantica and Setaria equina adult worms antigen.

DISCUSSION

The phenomenon of cross reactions between many parasites is now well established. The previous results concerned with serodiagnosis of parasitic diseases were always contradictory due to the presence of antigens shared by different helminths.
In the present study, using double diffuision test, cross reactions were obtained between Fasciola gigantica antigen and anti-Schistosoma mansoni hyperimmune serum. This result agreed with that of Hillyer and Santiagodeweil (1977), who stated that F. hepatica antigens cross reacting with Schistosoma mansoni adult worm antisera were absent from this specific antigen. Also Duxbury and Sadun (1967) found cross reaction between Schistoaoma haemat-obium and filaria of human and Mannweiler (1980) found cross reactions among schistosoma, filaria and whole hydatid cyst fluid; Zakia (1984) had many difficulties in the serological diagnosis of Setaria equina infestation due to presence of cross reaction between S. equia and the common helminths infesting donkeys.
Similar findings were also detected by Higashi and Derhalli (1986) who found that there were cross reactions between Schistosoma mansoni and hydatid cyst fluid. On the other hand, Du-Plessis and

Wyk (1972) informed that cross reactions were not clear when cercaria of Schistosoma mattheei were used in the diagnosis of infection by using the indirect fluorescent antibody test. This might be attributed to the scanty amount of the common antigens present in the larval stages of the parasites.

Concerning hydatid antigens, the present result showed that, hydatid antigens (4&5) mixture gave cross reactions with Schistosoma mansoni, Fasciola gigantica and Setaria equina, which was in agreement with that obtained by Higashi and Derhalli, 1986.

The preparation and isolation of parasite specific antigens are now necessary for accurate diagnosis of parasitic diseases, particularly to avoid false positive and negative diagnosis of such infections.

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