SUMMARY

Immunodiagnosis of urinary schistosomiasis has proved to be very useful and more sensitive than parasitological methods. Antigen detection assays are considered of prime importance for immunodiagnosis, as the detection of circulating antigens can indicate an active infection.

This study included 180 humans divided in 3 groups, Group A: Schistosoma infected group (n=60), group B: other parasites infected group (n=60) and group C: healthy control group (n=60). Schistosomiasis infected patients were subjected to clinical history taking, parasitological estimation of infection intensity, and detection of proteinuria and haematuria. The urine and serum samples of all the study groups were examined for the presence of CL antigen by sandwich ELISA procedure using rabbit polyclonal IgG anti-*Schistosoma* antibodies.

Concerning the main presenting symptoms of the *Schistosoma* infected patients 65% gave a complaint while 35% of patients were asyptomatic. Macroscopic haematuria was present in 25% of patients, dysuria was present in 20% and 20% show both haematuria and dysuria.

Microscopic examination of the urine samples of these patients revealed that (73.3%) show positive haematuria of which 28.3% had mild haematuria, 13.3% with moderate haematuria and 31.6% with marked haemturia.

As for detection of proteinuria, 80% of *Schistosoma* infected group reveald positive proteinuria with strip test of which (25%) had mild proteinuria, (28.3%) gave moderate proteinuria and (26.6%) with severe proteinuria.

According to parasitological examination and the egg load in urine samples of *Schistosoma* infected group (counted by the nucleopore technique) : (41.6%) patients revealed light infection while, (46.6%) of the patients had moderate infection and only 7 of the patients (11.6%) have heavy infection.

In the present study the preparation and the purification of CL antigen from eggs *S. haematobium* by ion exchange chromatography was performed and followed by gel filtration chromatography on Sephacryl-A-100. The eluted proteins, from the gel filteration column chromatography analyzed by SDS-PAGE showed only one band at 25 kDa which represents purified CL.

The CL was used for injection of rabbit for production of hyperimmune serum. This serum was then purified through several steps for IgG purification; ammonium sulfate precipitation, caprylic acid treatment and ion exchange chromatography. Then this purified IgG rabbit sera was used as both antigen capture and peroxidase conjugated to detect the antigens by sandwich ELISA. Standardization of sandwich ELISA used for detection of schistosoma antigens was carried out for optimization of the procedure conditions before application of the technique on the different study group's samples (urine and sera)

CL detection in the serum samples of the tested groups using sandwich ELISA revealed a sensitivity of 85%, a specificity of 88.3% compared to group B (other parasitic infections) and a specificity of 100% compared to group C (healthy control group).

Concerning detection of CL in urine samples; the sensitivity of the procedure was 83.3%, specificity was 81.8% compared to group B and 100% compared to group C.

CL detection in the serum samples of the tested groups by sandwich ELISA using nanomagnetic, out of 60 Schistosomiasis cases 57 cases gave positive results, while 3 cases gave negative results, giving a sensitivity of 95%. All the 60 healthy controls (group C) were negative being below the cut off value for CL positivity giving a 100% specificity of the procedure, comparing to infected group, In group B (patients with other parasitic infections), 4 cases were detected as positive (2 with fascioliasis, 1 with ascariasis and 1 case with Ankcylostoma infection), while the other 56 (93.3%) cases were negative giving specificity of the procedure of 93.3% to group B. The P-value is < 0.001 which means that there is a statistical significance in positivity between schistosomiasis group and other tested groups.

Detection of *S. haematobium* CL antigen in urine by sandwich ELISA using immunomagnetic bead technique. The OD cut off value is 0.402. The result shows that out of 60 schistosomiasis infected cases, 55 cases (91.6%) were positive giving a sensitivity of 91.6%. On the other hand, only 4 cases (6.6%) of group B (2 with fascioliasis, 1 with ascariasis and 1 case with ancylostoma infection) were positive giving a specificity of 93.4%, while none of the healthy controls gave positive results giving a specificity of 100%. There is a statistically significant (P < 0.001) difference in the positivity between group A and the other two groups

Finally from the obtained results, it could be included that the detection of CL antigen by sandwich ELISA using nanomagnetic in serum and urine samples of patients was apparently found to be more sensitive and specific than detection of CL antigen by sandwich ELISA only in this

study. This can help the early diagnosis and treatment of S. haematobium infection to reduce morbidity and mortality rates due to this infection.