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Received 30 July 1996; accepted for publication 2 October 1996

TRANSACTIONS OF THE ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE (1997) **91**, 154–155

Short Report

A reagent strip antigen capture assay for the assessment of cure of schistosomiasis patients

Lisette van Etten[1], Lisette van Lieshout[1], Moustafa M. Mansour[2] and André M. Deelder[1] *[1]Laboratory of Parasitology, Medical Faculty, Leiden University, The Netherlands; [2]US Naval Medical Research Unit no. 3, Cairo, Egypt*

Keywords: schistosomiasis, *Schistosoma* spp., chemotherapy, praziquantel, assessment of cure, circulating cathodic antigen

A simple reagent strip method has recently been developed for the diagnosis of *Schistosoma mansoni* infection (VAN ETTEN *et al.*, 1994). The test takes only 75 min and is based on a previously developed antigen capture enzyme-linked immunosorbent assay (ELISA) using monoclonal antibodies raised against a genus-specific, adult worm, gut-associated antigen—circulating cathodic antigen (CCA) (DEELDER *et al.*, 1980; DE JONGE *et al.*, 1990). The specificity and sensitivity of the assay, determined with urine samples from 61 uninfected control individuals and 67 individuals infected with *S. mansoni*, were 97% and 96% respectively (VAN ETTEN *et al.*, 1994). Unlike the CCA-ELISA, the CCA reagent strip method is not quantitative. However, in control programmes, a simple 'yes' or 'no' answer would be sufficient.

The purpose of the present study was to determine whether the CCA reagent strip method could replace the CCA-ELISA for the assessment of cure or for the comparison of different treatment protocols. We therefore re-examined urine samples collected during a previous study (VAN LIESHOUT *et al.*, 1994) from 35 hospital patients with schistosomiasis before and one, 3 and 6 weeks after treatment with praziquantel. Thirteen patients were treated with 60 mg/kg body weight (group 1) and 22 patients with 40 mg/kg (group 2). On the day of admission, all subjects were excreting live *S. mansoni* eggs in their stools (10–1213 eggs/g, median 153); 2 cases also had *S. haematobium* eggs in their urine (7 and 11 eggs/10 mL urine).

Sixteen patients (46%) were considered not to be completely cured, based on the results of parasitological examination or the detection of circulating antigen in serum and urine by ELISA. Treatment failures were mainly among the patients treated with 40 mg/kg praziquantel (VAN LIESHOUT *et al.*, 1994).

Address for correspondence: Lisette van Etten, Laboratory of Parasitology, Leiden University, P.O. Box 9605, 2300 RC Leiden, The Netherlands; phone +31 71 527 6859, fax +31 71 527 6850, e-mail vanetten@rullf2.leidenuniv.nl

Table. Detection of circulating cathodic antigen in the urine of schistosomiasis patients before and after chemotherapy with praziquantel

	Before treatment	After treatment 1 week	3 weeks	6 weeks
No. of patients	35	34[a]	34[a]	34[a]
No. positive				
Reagent strip	32(91%)	12(35%)	13(38%)	12(35%)
ELISA[b]	29(83%)	14(41%)	15(44%)	14(41%)
P	0·25	0·75	0·69	0·63

[a]Due to depletion of some urine samples, no result could be obtained for 3 individuals at certain times after treatment.
[b]Enzyme-linked immunosorbent assay.

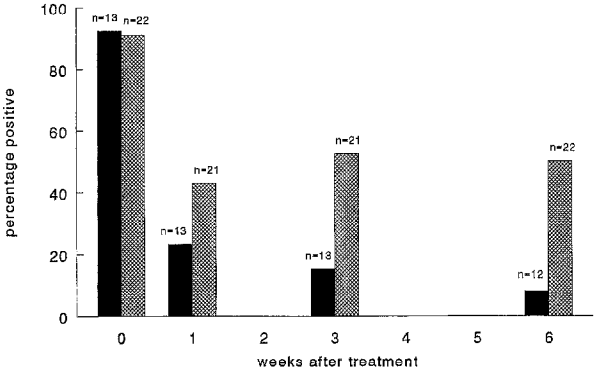

Figure. Detection of circulating cathodic antigen in the urine of 35 Egyptian hospital patients with schistosomiasis by the circulating cathodic antigen reagent strip assay, before (0) and one, 3 and 6 weeks after treatment with praziquantel at 60 mg/kg (solid bars, n=13) and 40 mg/kg (hatched bars, n=22).

The results of the reagent strip assay and ELISA of the urine of both groups of patients are summarized in the Table. The differences between the 2 methods, at all times, were not significant (P>0·25; McNemar's test).

More individuals became negative by the reagent strip test in group 1 than in group 2 (Figure). Six weeks after chemotherapy, all individuals with positive reagent strip results also had levels of CCA detectable by ELISA, except for one person in group 2; 6 of them were excreting viable eggs.

The efficacy of treatment (i.e., no CCA in urine 6 weeks after chemotherapy), as determined by the reagent strip assay and ELISA respectively, was 92% and 83% for group 1 (n=12), and 50% and 46% for group 2 (n=22). Only one case in each group, with a low level of CCA in urine, was missed by the reagent strip assay at this time.

Our results demonstrated that the reagent strip assay for the detection of CCA in urine is a sensitive method

to monitor the effect of anti-schistosome chemotherapy and compares well with the ELISA. The previous observation, that higher cure rates were obtained after treatment with 60 mg/kg praziquantel than with 40 mg/kg, was substantiated with this qualitative assay.

Acknowledgements

We thank the ward staff of US Naval Medical Research Unit no. 3 for collecting urine samples. This study received financial support from the Research and Development Programme of Life Science and Technology for Developing Countries of the European Community (STD 3; contract TS3-CT91-0049).

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Received 26 September 1996; revised 4 November 1996; accepted for publication 5 November 1996