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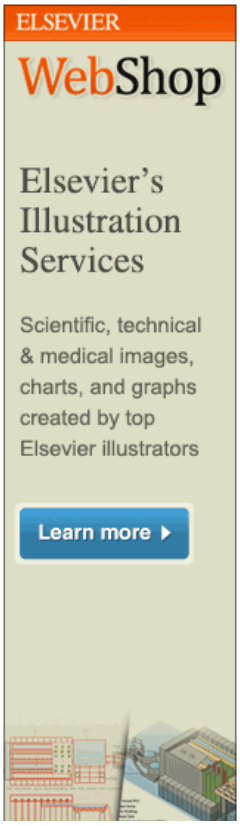

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Urinary schistosomiasis-associated morbidity in schoolchildren detected with urine albumin-to-creatinine ratio (UACR) reagent strips

J. Russell Stothard[a], , Jose C. Sousa-Figueiredo[a], I. Simba Khamis[b], Amadou Garba[c], David Rollinson[a]

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Abstract

Objective

To evaluate urine albumin-to-creatinine ratio (UACR) reagent strips for detection of urinary tract pathology (UTP) associated with urinary schistosomiasis in schoolchildren from Zanzibar.

Patients and methods

Sixty-six schoolchildren were examined for urinary schistosomiasis and UTP using urine reagent strips (Hemastix®), urine microscopy and portable ultrasonography. The UACR was estimated using Microalbustix®; univariate and logistic regression methods were used to test for statistical associations.

Results

Prevalence of egg-patent schistosomiasis was 65.2% while 77.3% had micro-haematuria and 66.1% had a least one ultrasound-identified UTP. Abnormal UACR (≥3.4 mg/mmol) was frequent (88.4%) but an unsatisfactory identifier of UTP, albeit highly sensitive: sensitivity (SS) = 100.0%, specificity (SP) = 23.8%, positive predictive value (PPV) = 71.9%, negative predictive value (NPV) = 100.0%. When only severely abnormal UACR was considered (≥33.9 mg/mmol), SS decreased while SP improved: SS = 58.5%, SP = 61.9%, PPV = 75.0%, NPV = 43.3%.

Conclusion

Abnormal and severely abnormal UACRs were strongly associated with egg-patent urinary schistosomiasis and UTP, although via different mechanisms: respectively, from venous blood released directly into the urine from bladder wall perforations, and from leaching sera released from chronic egg-induced lesions throughout the urinary tract. From a control perspective, Microalbustix® reagent strips are therefore best applied in pre-screening protocols allowing selection, or rather confident exclusion, of schoolchildren with urinary schistosomiasis for more detailed investigations.

Keywords

Schistosoma haematobium; Urinary tract pathology; Microalbustix®; Albuminuria; Ultrasonography; Zanzibar

Corresponding author. Tel.: +44 207 942 5490; fax: +44 207 942 5518.

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