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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 at 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-patient 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

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