Haematuria in coastal Kenya is associated with Schistosoma haematobium but not Wuchereria bancrofti infection

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Understanding the level of morbidity associated with filarial infections has assumed greater importance as part of efforts to provide better estimates of the global disease burden (WORLD BANK, 1993; WHO, 1994; MICHAEL et al., 1996). Historically, persons with circulating Wuchereria bancrofti microfilariae with no outward evidence of lymphatic dysfunction have been considered to be asymptomatic. However, more recent studies have provided evidence of subclinical renal and lymphatic abnormalities in these persons (DRIEVER et al., 1992; FREEDMAN et al., 1994, 1995).

We studied the prevalence of W. bancrofti microfilaraemia in 2 adjacent communities in Kwale District, Kenya, in an effort to understand the relationship between transmission intensity and antifilarial antibody levels (WAMAE et al., in press). To investigate the influence of other parasitic infections on the relationship between filarial infection and antifilarial responses, we also examined subjects for intestinal helminths and for Schistosoma haematobium, which is prevalent in this region of Kenya (SHIMADA et al., 1987; KING et al., 1988). This provided us with an opportunity to analyse the relative contributions of W. bancrofti and S. haematobium to haematuria in an area where their distributions overlap.

The study was conducted in Mvumoni and Muhaka Kilore, 2 of the 13 communities that constitute Muhaka, Kwale District. After registration of all members of each household, aged one year and above, a simple random sample selection of 100 households from each community was made. Subsequently, 200 participants were randomly selected from each community, each person in the 100 households was given a number, and 200 numbers were drawn at random from a pool of correspondingly numbered tags. After obtaining informed consent, venous blood samples (2–4 mL) were collected between 22:00 and 24:00 to detect any circulating microfilariae and to collect serum. Serum samples were obtained from each individual, and urine specimens were collected between 10:00 and 12:00 and checked for haematuria and proteinuria, using a urine test strip (Chemstrip6, Boehringer Mannheim Diagnostics, Indianapolis, Indiana, USA). Urine specimens were collected between 10:00 and 12:00 and checked for haematuria and proteinuria, using a urine test strip (Chemstrip6, Boehringer Mannheim Diagnostics, Indianapolis, Indiana, USA).

Subsequently, 10 mL of each urine sample were filtered through polycarbonate Nuclepore® filters, 25 mm diameter and 12.0 μm pore size, and examined for S. haematobium ova. Group differences in the prevalence of S. haematobium, W. bancrofti, haematuria and proteinuria were analysed using the χ² test.

The overall age-specific prevalences of W. bancrofti microfilaraemia and antigenaemia, S. haematobium, haematuria and proteinuria in both communities are shown in the Table. As previously reported, W. bancrofti microfilarial prevalence was significantly higher in Kilore than in Mvumoni (WAMAE et al., 1997). The prevalence of filarial antigenemia increased with age in both Mvumoni and Kilore and was higher in Kilore (48.9%) than in Mvumoni (20.5%) (P<0.001). In contrast, the prevalence of S. haematobium, haematuria and proteinuria decreased with age and there was no significant difference in the prevalence of S. haematobium between the 2 communities. Age-specific prevalence of proteinuria paralleled that of haematuria. The prevalence of haematuria was significantly higher in Kilore (64.6%) than in Mvumoni (51.4%) (P<0.019). Although haematuria prevalence was higher in Kilore, the community with the higher prevalence of W. bancrofti, there was no association between age-specific prevalence of W. bancrofti infection (either microfilaraemia or antigenemia) and haematuria in univariate or multivariate analyses. In contrast, S. haematobium infection was significantly associated with haematuria (P<0.001). Thus, unlike S. haematobium, W. bancrofti does not appear to be associated with gross haematuria in this setting. It is possible that we failed to observe haematuria in some microfilaraemic persons because we did not count erythrocytes in urine specimens, as did DRIEVER and co-workers (1992). Although the dipsticks we employed are capable of detecting 5000–10 000 erythrocytes/mL of urine, it is difficult to compare these numbers to Addis counts based on total numbers of erythrocytes in a urine sample collected over a period of time. It seems likely, however, that Addis counts are a more sensitive means of detecting erythrocytes (RACE, 1980). Thus, we cannot rule out the possible contribution of microfilariae or immune complexes elicited by...
circulating filarial antigens as a cause of subclinical renal damage. Nonetheless, we found no evidence that co-infection with *W. bancrofti* exacerbated haematuria in persons infected with *S. haematobium* in this setting.

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**References**


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**Introduction**

When the rodent metastrongyle lungworm *Parastrongylus cantonensis* was first reported in rats and bandicoots in Ceylon (now Sri Lanka) it was predicted that the widespread and abundant snails infected and suggested that the widespread and abundant giant African snail *Achatina fulica* was a likely intermediate host. *S. haematobium* was in this setting.

**Case report**

A 30 years old male from Makola, Kiribathgoda in the Colombo district complained of loss of vision in the right eye of 2 d duration. Four weeks earlier, he had suffered fever, headache, arthralgia, myalgia and generalised malaise. He had been treated with diethylcarbamazine and prednisolone and his symptoms subsided. Ocular examination on admission (25 June 1997) revealed visual acuity of 6/60 in the right eye and 6/6 in the left.

Fundal examination of the affected eye showed an actively motile, creamy-white roundworm in the subretinal space, with retinal oedema. Several tracks due to the worm were also seen (Fig. 1A). Five days later the worm had moved into the vitreous (Fig. 1B). A trans-para-planar posterior vitrectomy was performed by one of us (C.F.) on 10 July 1997, under general anaesthesia, and the worm was found in the subhyaloid space of the vitreous. A posterior vitreous detachment was induced using suction with the vitreal probe and an opening was made in the posterior face. Thenceafter an intra-ocular foreign body forceps was used to extract the intact live worm.

No neurological sign or symptom or evidence of meningeal irritation was noted. The white blood cell count was 9600 with 24% eosinophils and the erythrocyte sedimentation rate (ESR) was 62 mm (in the first hour). On discharge from hospital (13 July 1997) the patient’s vision was unchanged but the eosinophil count and ESR had returned to normal.

Four weeks after the operation, vision in the right eye remained at 6/60.

The worm (Fig. 2) showed the characteristic reddish streak of blood in the intestinal tract. It died a few hours after removal and was fixed in 70% alcohol and exam-