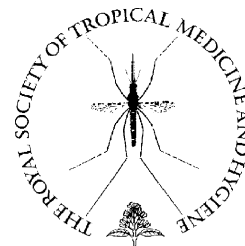




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Mass treatment with albendazole reduces the prevalence and severity of *Oesophagostomum*-induced nodular pathology in northern Ghana

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Summary Previous surveys conducted in northern Ghana where *Oesophagostomum bifurcum* is endemic showed that *O. bifurcum*-induced nodular pathology could be detected in up to 50% of the inhabitants. The impact of albendazole-based mass treatment to control both infection and morbidity is assessed and compared with the situation in a control area where no mass treatment has taken place. A significant reduction in the prevalence of infection based on stool cultures was achieved following two rounds of mass treatment in one year: from 52.6% (361/686) pre treatment to 5.2% (22/421) 1 year later ($\chi^2_1 = 210.1$; $P < 0.001$). At the same time, the morbidity marker of ultrasound-detectable nodules declined from 38.2% to 6.2% ($\chi^2_1 = 138.1$; $P < 0.001$). There was a shift from multinodular pathology, often seen in heavy infections, to uninodular lesions. In the control villages where no treatment took place, *O. bifurcum* infection increased from 17.8% (43/242) to 32.2% (39/121) ($\chi^2_1 = 9.6$; $P < 0.001$). Nodular pathology decreased slightly from 21.5% to 19.0%, but a higher proportion of these subjects developed multinodular pathology compared with baseline ($\chi^2_1 = 5.5$; $P = 0.019$). It is concluded that repeated albendazole treatment significantly reduces *O. bifurcum*-induced morbidity. © 2006 Royal Society of Tropical Medicine and Hygiene. Published by Elsevier Ltd. All rights reserved.

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1. Introduction

In a number of villages in northern Ghana where *Oesophagostomum bifurcum* is endemic, abdominal ultrasound has demonstrated that up to 50% of subjects have *O. bifurcum*-induced nodular pathology (Storey et al., 2001a). Most of the affected persons develop subclinical oesophagostomiasis, whilst approximately 2% progress to clinical oesophagostomiasis and may eventually require surgical intervention if untreated (Storey et al., 2001b). Two distinct types of nodular disease due to *O. bifurcum* infection have been described in this area. In multinodular disease, characterised by the presence of hundreds of pea-sized nodules in the colon wall, the patient presents with non-specific symptoms of general abdominal pain, persistent diarrhoea and weight loss. Uninodular disease, called 'Dapaong tumour', on the other hand, has typical signs of an abdominal mass and is sometimes, but not always, associated with localised abdominal pain and fever (Haaf and van Soest, 1964; Storey et al., 2000).

Albendazole is considered one of the drugs of choice against a variety of soil-transmitted nematodes and is easy

to use as a single 400 mg oral dose (Montresor et al., 1998; Urbani and Albonico, 2003). Albendazole is also the drug of choice for the treatment of *O. bifurcum* infection and *O. bifurcum*-induced nodular pathology and has been shown to reduce the prevalence, number, size and life-span of the ultrasound-detectable nodules (Storey et al., 2001c).

Because of the high prevalence of human oesophagostomiasis in northern Ghana and Togo as well as the severity of clinical symptoms in some infected subjects, control efforts are now being implemented in the region. Control is based on mass treatment with albendazole and results have mainly been monitored in terms of reductions in the parasite load with the aim of transmission control. A major objective of control, however, is to reduce morbidity. The present study focuses on the impact of repeated mass treatment on the marker for morbidity, the ultrasound-detectable abdominal nodules. Disappearance of the nodules and changes in the appearance of the visible nodules are followed along with the changes in parasitological markers of infection, i.e. the presence and numbers of third-stage (L₃) *O. bifurcum* larvae in stool cultures.

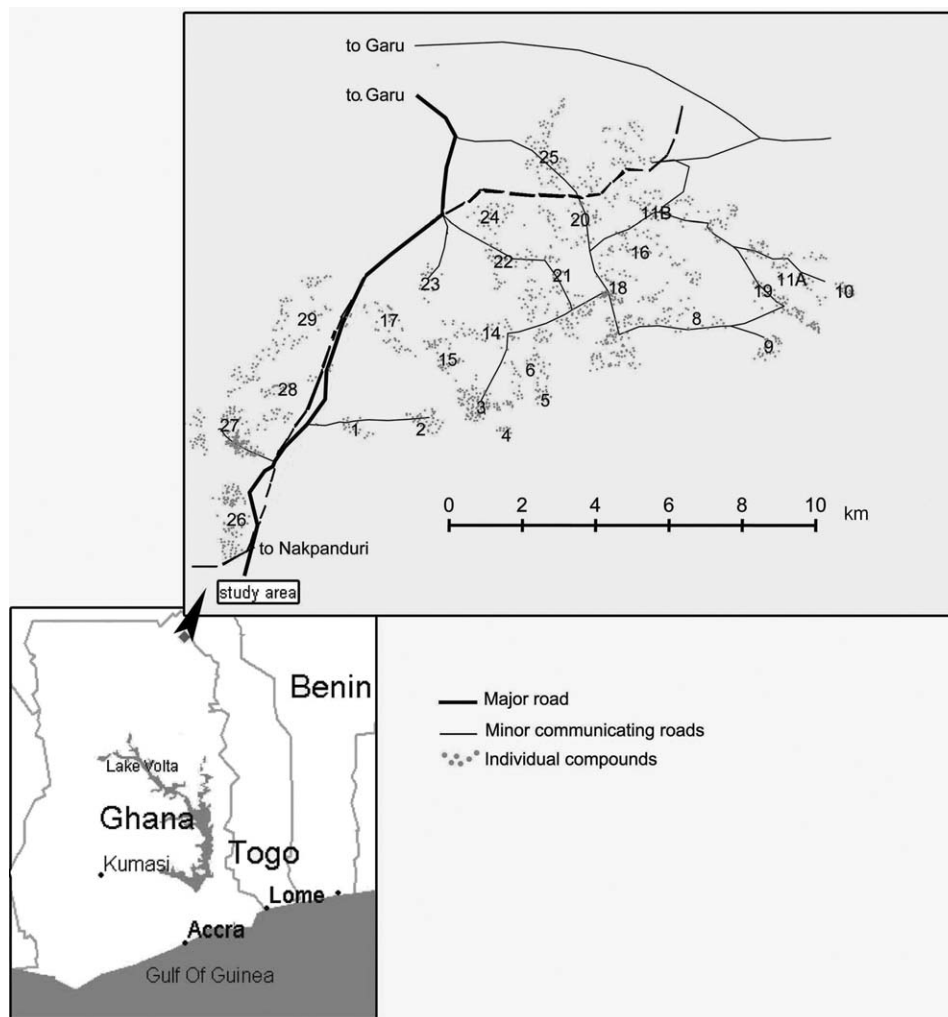


Figure 1 Map of Ghana showing the intervention and control areas. The numbers on the map represent village numbers; the broken line represents the boundary between the intervention area (Villages 1–24) and the control area (Villages 25–29).

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