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The role of 'passive chemotherapy' plus health education for schistosomiasis control in China during maintenance and consolidation phase

Guo Jia-Gang [a,*], Cao Chun-Li [a], Hu Guang-Han [b], Lin Han [b], Li Dong [b], Zhu Rong [a], Xu Jing [a]

[a] *National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, Shanghai 200025, China*
[b] *Jiangxi Institute of Parasitic Diseases, Nanchang 330046, China*

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Abstract

In order to explore the possibility of further optimising schistosomiasis control during the maintenance and consolidation phase in China, two highly endemic villages were selected to compare the strategy of 'passive chemotherapy' plus health education to that of mass chemotherapy singly. Emphasis was placed on treatment coverage with praziquantel among individuals infected with *Schistosoma japonicum* and costs incurred for treating an infected person. The results show that the former strategy was almost as good as the latter producing treatment coverage rates among egg-positives of 96.2–97.1% during 2 years, while corresponding rates of 100% were achieved in the village where mass chemotherapy was employed. Importantly, the cost of the former strategy was only about half that of mass chemotherapy, i.e. 49.0% in the first year and 54.6% in the following. Moreover, 'passive chemotherapy' together with health education can conveniently be integrated into the primary health care system making it an attractive strategy for schistosomiasis control during the maintenance and consolidation phase.

Keywords: Schistosomiasis; Control; Passive chemotherapy; Health education; Mass chemotherapy; Costs; China

1. Introduction

Experiences gained from countries where the public health importance of schistosomiasis has been recognized, where there is strong political will to control the disease, and where control measures are implemented, support the strategy for morbidity control endorsed by the World Health Organization (WHO) since the mid 1980s (WHO, 1993; Chitsulo et al., 2000). Four national schistosomiasis control programmes – i.e. Brazil, China, Egypt and the Philippines – can be cited to underscore that concerted control efforts, together with economic development, result in very low levels of morbidity (Engels et al., 2002; WHO, 2002).

The World Bank Loan Project (WBLP) on schistosomiasis control, carried out in China from 1992

* Corresponding author. Tel.: +86 21 54650863; fax: +86 21 54650863.
E-mail address: guojg@sh163.net (J.-G. Guo).

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to 2001, suggests that a strategy of mass chemotherapy once a year targeted at people aged 6–60 years in highly endemic areas of *Schistosoma japonicum* (infection rate $\geq 15\%$) is effective for morbidity control (Chen et al., 2005). However, some challenges are attached to this strategy, i.e. low compliance after repeated praziquantel administration, cost of treatment and the potential risk for development and spread of drug resistance. In addition, vertical control programmes, while initially successful, are not sustainable (Utzinger et al., 2003). In the long-term, control efforts need to be absorbed into more horizontal "sector-wide" approaches (Hutton and Tanner, 2004). Indeed, experts have recommended many years ago that schistosomiasis control should build upon existing health services, and national policies should strengthen their capacities (Tanner and Degremont, 1986). The integration of control and decentralisation of decision-making and delivery have been stressed. When national policy makers and health authorities recognize the focal public health importance of schistosomiasis, they can provide support to peripheral health services to deal with the disease (Gryseels, 1989; van der Werf et al., 2004). Therefore, primary health care services should be strengthened, so that they can implement the necessary control measures, including basic clinical care. Health services should also ensure more active morbidity control and implement appropriate treatment strategies where required by the epidemiological situation.

In areas where control efforts have brought the prevalence of schistosomiasis to low levels, the maintenance of adequate resources is essential in order to consolidate the benefits obtained (Engels et al., 2002; WHO, 2002). However, recommended activities to maintain high standards of quality in carrying out control interventions should be done with due attention to the cost-effective use of available funds. Screening and treatment strategies should be adapted in view of changes in the epidemiological situation, reduced costs of the drug of choice praziquantel and according to the principle that a strategy should save labour and expenses (Guyatt and Tanner, 1996; Brooker et al., 2004). As the numbers of infected people in the endemic areas recede, a more focal coverage of the remaining egg-positive individuals is likely to be more cost-effective than continued mass chemotherapy, with compliance remaining high (Hu et al., 2000).

In this study, carried out from 1998 to 2000 in previously high endemic areas of *S. japonicum* in the Poyang Lake region, we have investigated the impact of replacing traditional mass chemotherapy with 'passive chemotherapy' together with a strengthening of health education. Under 'passive chemotherapy' we mean a concept whereby medical teams treat residents in schistosome-endemic areas with praziquantel upon their request.

2. Materials and methods

2.1. Study area and population

Fanhu and Yuanyang, two villages endemic for *S. japonicum* in the Poyang Lake region, Jiangxi province, were selected for the present study. This area is one of the strongholds for *S. japonicum*, and hence its control proved particularly challenging (Chen and Lin, 2004; Guo et al., 2005). Selection of study villages was based on the following considerations: the natural environment and people's socio-economic situation and livelihoods are similar and the prevalence of infection with *S. japonicum* among residents was known from previous studies, i.e. 27.5% and 24.8% in Fanhu and Yuanyang, respectively (Lin et al., 1997). In 1992, annual mass chemotherapy with praziquantel was initiated in the area within the frame of the WBLP. Infection rates in both villages decreased following this strategy.

The study was launched in December 1998. A total of 423 people in Fanhu and 362 people in Yuanyang, aged between 6 and 60 years, were selected at random.

2.2. Study design

All study participants were first subjected to stool examination, employing the Kato–Katz technique (Katz et al., 1972). This was done in December 1998 and repeated one year later. In Fanhu, 'passive chemotherapy' plus health education were introduced, replacing the previous years of mass chemotherapy. Yuanyang served as a control with continued mass chemotherapy as before. These interventions were carried out in February 1999 and in February 2000.