First report of the isolation of an adult worm of the genus *Brachylaima* (Digenea: Brachylaimidae), from the gastrointestinal tract of a human

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Abstract

A 78-year-old woman presented with an 18-month history of intermittent diarrhoea. Examination of her stools revealed brachylaimid eggs, which were present in three separate specimens over a week. After treatment with praziquantel a degenerate adult *Brachylaima* species was recovered from her faeces. She lived in a rural area of South Australia and ate vegetables grown in her own garden which had been infested with helicid snails. In South Australia these introduced European helicid snails are commonly infected with brachylaimid intermediate larval stages and are considered to be the source of the human infection. © 1998 Australian Society for Parasitology. Published by Elsevier Science Ltd.

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enquiry revealed that she had been having intermittent episodes of diarrhoea over the preceding 18 months. Two faecal specimens, collected 4 days apart, contained eggs of a brachylaimid trematode similar to those described by Butcher et al. [2]. Five days later the patient was transferred to The Queen Elizabeth Hospital, Adelaide, where further faecal samples showed the same eggs. All bacterial cultures were negative for other pathogens. A blood film at this time disclosed a blood eosinophil count of $0.90 \times 10^9 \text{L}^{-1}$ (normal range $= 0.04-0.4 \times 10^9 \text{L}^{-1}$). The patient was treated with praziquantel 600 mg orally twice daily for 2 days and all bowel motions were collected for the following 2 days. A degenerate gravid adult brachylaimid worm (Figs 1 and 2) was recovered from faeces collected on the first day of treatment. Egg clearance occurred by the second day of treatment and stools remained negative for the next 8 months. The patient was discharged from the Queen Elizabeth Hospital and returned to the Kapunda Hospital, being discharged 1 week later with no further gastrointestinal symptoms. Over the next 8 months the patient gained 2 kg in weight and had no recurrence of diarrhoea. Eosinophil counts of peripheral blood were within normal limits.

The diarrhoea began about 18 months before admission to Kapunda Hospital. At that time there was both a mouse plague and a plague of helicid snails in the district. The patient had a vegetable patch in her garden and frequently ate home-grown vegetables. Stools were also obtained from her husband and about a dozen relatives who sometimes came to her house for a meal; all were negative for brachylaimid eggs.

The life-cycle of brachylaimid flukes involves the passing of eggs in the faeces of the definitive host; ingestion of these eggs by a suitable land snail; development of a sporocyst in the digestive gland of the snail; release of the first larval stage, cercariae, in the snail’s slime trail; cercariae entering a second intermediate land snail host; development of a cercaria into a metacercaria in the snail’s kidney; and finally, ingestion of a metacercaria by the definitive host, resulting in the development of an adult worm in the intestinal tract [3].

![Fig. 1. Lateral view of a degenerate brachylaimid adult worm recovered from human faeces after treatment with praziquantel. The gravid uterus (u) and the ventral sucker (vs) are present, with all other morphological features being distorted. Scale bar = 500 μm.](image)
Fig. 2. Higher powered view of the same degenerate brachylaimid adult worm as in Fig. 1, showing the ventral sucker (vs) and the gravid uterus (u) filled with eggs. Scale bar = 500 μm.

It is postulated that this patient became infected after inadvertently eating snails containing metacercariae which were present on home-grown salad vegetables. Alternatively, viable metacercariae may have been deposited on the vegetables via the snail’s slime trail and excreta and/or from the presence of crushed snails.

The snails most likely to be involved are the introduced European helicid land snails, which are noxious pests in the district [4]. In South Australia they are known to harbour brachylaimid intermediate stages [5]. The helicid snail *Cernuella virgata* is prevalent in the local district and snails collected from the Kapunda district were infected with brachylaimid cercariae and metacercariae.

In our original report [2] we described the eggs observed as being those of *Brachylaema* species, although no adult worm had been seen. We should really have described them merely as eggs of the family Brachylaimidiae, as all brachylaimid eggs are similar in morphology. The worm recovered from this patient was not sufficiently preserved to permit formal identification. However, we have recently established a life-cycle of this parasite in the laboratory (unpublished observations). Eggs from this patient’s faeces were passed through first intermediate snail hosts and the resulting cercariae used to infect second intermediate snail hosts, then Swiss outbred mice were infected with the metacercariae. Adult fluke worms recovered from these mice have been identified as belonging to the genus *Brachylaema*, although precise species identification has yet to be determined. We thus confirm that this human infection is with a fluke worm of the genus *Brachylaema*.

Kapunda is 130 km from Maitland, where the two original cases were described. Information is likely to be much more widespread in rural South Australia and perhaps in other parts of this country than has previously been appreciated.

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References


