

Effect of praziquantel on intraocular cysticercosis: a case report

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SUMMARY A patient with intravitreal cysticercosis was treated with the new anthelmintic drug, praziquantel. A transient toxic effect on the cysticercus was observed, but the drug was unable to kill the parasite.

Although a pars plana vitrectomy is the treatment of choice of intravitreal cysticercosis,^{1,2} this sophisticated method is not readily available in most developing countries where the disease is most prevalent. So a medical treatment would be most welcome. Recently praziquantel,³ a heterocyclic pyrazinoisoquinoline derivative, has been shown to be highly effective against a broad range of helminths, including the four human schistosoma species, most of the other flukes, the tapeworms as well as *Cysticercus cellulosae*, the larval stage of *Taenia solium*, the causal agent of cysticercosis. The drug is rapidly absorbed on administration and reaches peak serum levels about 1 µg/ml one to two hours after an oral dose of 50 mg/kg in adults. Concentrations of 14 to 20% of the amount of free plus protein-bound praziquantel in the plasma are found in the cerebrospinal fluid. After preliminary good results obtained in the treatment of porcine cysticercosis⁴ praziquantel was used in a few cases of human neurocysticercosis^{5,6} and found to be highly active. The efficacy of the drug was further substantiated by the results of several large clinical trials.⁷⁻⁹ In a review of 172 patients with neurocysticercosis treated with praziquantel 87.2% of them were reported to have had either an excellent, a good, or a satisfactory response to the drug.⁴ We here describe the effect of praziquantel in a case of intraocular cysticercosis.

Case report

A 45-year-old Rwandese male presented with a slightly red, painful right eye and complained of

progressive visual loss for the previous six months. The visual acuities were weak light perception in the nasal field right and 6/6 left. He had a torpid right anterior uveitis with no flare but 1+ cells; posterior synechiae were present along the inferior half of the pupil and precluded a good view of the fundus. Indirect ophthalmoscopy through the hazy vitreous revealed an actively moving cysticercus larva with the scolex clearly visible and attached to the retina by a small stalk (Fig. 1). The left eye was entirely normal. Physical examination revealed some cutaneous nodules but was otherwise normal. Histological examination of an excised nodule confirmed the suspicion of cutaneous cysticercosis. Routine laboratory investigations, including full blood count, erythrocyte sedimentation rate, liver tests, urine and cerebrospinal fluid gave normal results. Since vitrectomy equipment was not available, we decided to try medical treatment with praziquantel. The patient took a daily dose of praziquantel 50 mg/kg body weight for two weeks, along with 50 mg prednisone to suppress the inflammatory reaction expected to occur in the eye and in other organs as a result of the destruction of parasites.^{10,11} We performed indirect ophthalmoscopy twice daily to assess the effect of the drug on the motility and the morphology of the cysticercus.

During the first three days of treatment the parasite gradually shrank in size, the surface of the wall of cyst became slightly rough and irregular, and the scolex appeared swollen (Fig. 2). Although the cysticercus appeared immobile during direct ophthalmoscopic observation from the third day on, the fact that the scolex was seen in different positions at different times of day clearly indicated that the larva was alive and continued to move in slow motion

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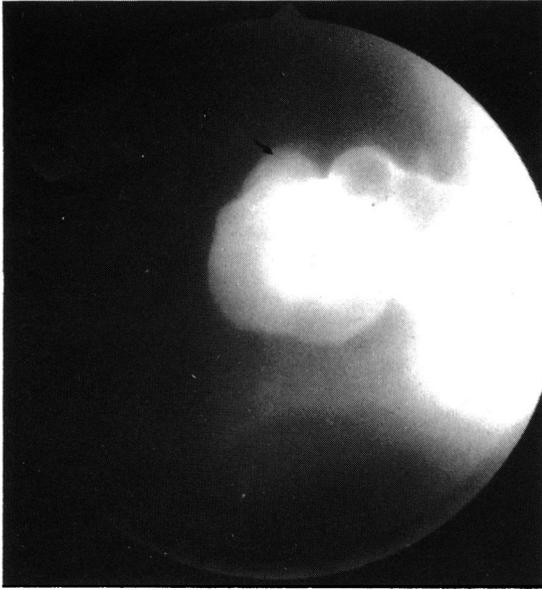


Fig. 1 *Cysticercus* before treatment. Scolex (arrow) partly hidden.

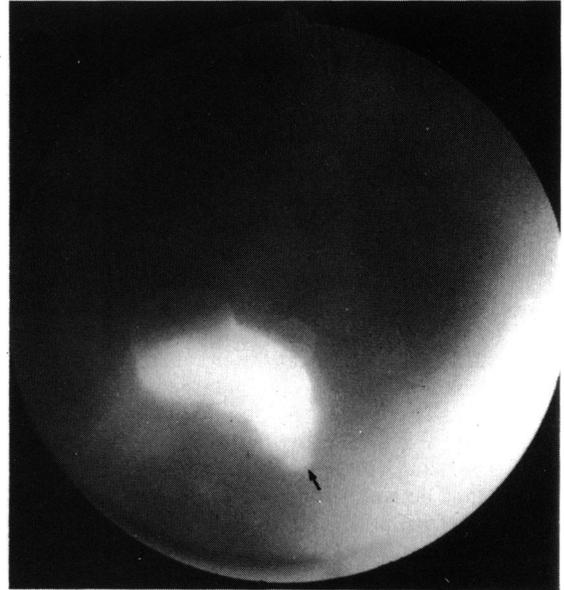


Fig. 2 *Cysticercus* after five days of treatment. Scolex (arrow) points down.

(Fig. 3). This situation remained essentially unchanged during treatment. Two days after the drug was stopped, the cysticercus seemed to have unfolded and to have regained its initial motility and morphology (Fig. 4).

During the first three days of treatment the patient complained of diffuse headache, which aroused the

suspicion of central nervous system involvement. He had no history of seizures, and a clinical neurological examination gave normal results. No other secondary effects could be attributed to praziquantel in our patient. Blood count, urine analysis, and liver function tests were unchanged from before treatment.



Fig. 3 Same day as Fig. 2, some hours later. Scolex (arrow) now points up.

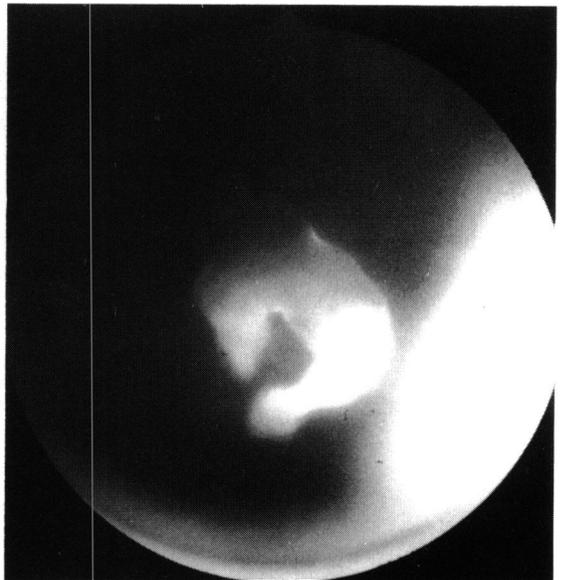


Fig. 4 *Cysticercus* three days after the end of treatment.

Discussion

Our observation is in agreement with the findings of others^{8,12}: praziquantel exerts a toxic but reversible effect on the intraocular cysticercus. The fact that the drug is unable to kill the parasite is probably due to insufficient concentration at that site. In the treatment of neurocysticercosis with praziquantel it has been emphasised that drug levels in blood are different from levels in ventricular or subarachnoid cerebrospinal fluid and that the expected results would depend on parenchymal, ventricular, or subarachnoid localisation of parasites.⁹ It is easy to understand that the localisation of an intravitreal cysticercus makes it a poor target for systemic treatment. There are two possible ways for praziquantel to reach an intravitreal cyst: first through the vitreous surrounding it, and secondly through the small stalk between the retina and the cyst. Most drugs penetrate poorly in the avascular vitreous, and, since praziquantel was unable to kill the parasites in two cases of subretinal cysticercosis,¹² the amount of drug passing from the retina to the cyst is unlikely to be sufficient.

It therefore appears that systemic medical treatment with praziquantel is not a valid alternative to vitrectomy in cases of intraocular cysticercosis. As the sophisticated equipment for performing this surgery is not available in most developing countries, it would be worthwhile determining the retinal toxicity of praziquantel in order to consider the possibility of giving it by intravitreal injection. The association of systemic and local treatment with praziquantel and steroids would provide the ophthal-

mologist in the third world with a weapon against a disease that now often ends in enucleation of a blind, painful, and unsightly eye.

References

- 1 Santos R, Dalma A, Ortiz E, Sanchez Bulnes L. Management of subretinal and vitreous cysticercosis. Role of photocoagulation and surgery. *Ophthalmology (Rochester)* 1979; **86**: 1501–4.
- 2 Zinn KM, Guillory SL, Friedman AH. Removal of intravitreal cysticerci from the surface of the optic nervehead. A pars plana approach. *Arch Ophthalmol* 1980; **98**: 714–6.
- 3 Pearson RD, Guerrant RL. Praziquantel: a major advance in anthelmintic therapy. *Ann Intern Med* 1983; **99**: 195–8.
- 4 Groll EW. Chemotherapy of human cysticercosis with praziquantel. In: Flisser A, Willms K, Laclette JP, Larralde C, Ridawra C, Beltrán F, eds. *Cysticercosis: present state of knowledge and perspectives*. New York: Academic Press, 1982: 207–18.
- 5 Rim HJ, Won C-R, Chu JW. Studies on the human cysticercosis and its therapeutical trial with praziquantel (Embay 8440). *Korea Univ Med J* 1980; **17**: 459–72.
- 6 Robles C., Chavarria M. Un caso de cysticercosis cerebral curado medicamento. *Gac Med Mex* 1980; **116**: 65–71.
- 7 Spina-França A, Nobrega JPS, Livramento JA, Machado LR. Administration of praziquantel in neurocysticercosis. *Tropenmed Parasitol* 1982; **33**: 1–4.
- 8 Botero D, Castano S. Treatment of cysticercosis with praziquantel in Colombia. *Am J Trop Med Hyg* 1982; **31**: 810–21.
- 9 Sotelo J, Escobedo F, Rodriguez-Carbajal J, Torres B, Rubio-Donnadieu F. Therapy of parenchymal brain cysticercosis with praziquantel. *N Engl J Med* 1984; **310**: 1001–7.
- 10 deGhetaldi L, Norman R, Douville A. Cerebral cysticercosis treated biphasically with dexamethasone and praziquantel. *Ann Intern Med* 1983; **99**: 179–81.
- 11 Markwalder K, Hess K, Valavanis A, Witassek F. Cerebral cysticercosis: treatment with praziquantel. *Am J Trop Med Hyg* 1984; **33**: 273–80.
- 12 Santos R, Chavarria M, Aguirre AE. Failure of medical treatment in two cases of intraocular cysticercosis. *Am J Ophthalmol* 1984; **97**: 249–50.