

# TREATMENT OF HUMAN TAENIASIS IN THE PHILIPPINES: A REVIEW

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**Abstract.** Studies relating to the treatment of human taeniasis in the Philippines using Atabrine, bithionol, and mebendazole are reviewed. Cure rates of 93.7% for Atabrine, 85%–100% for bithionol, and 84.62% for mebendazole are reported. Aside from these studies, recent experience in the treatment of *Taenia saginata* infections at the Department of Parasitology, College of Public Health, is also reported. Twenty patients referred to the department were treated, 3 with bithionol, 17 with praziquantel. Of the 17 patients treated with praziquantel, the study reported cure rates of 47–88.24%.

## INTRODUCTION

Taeniasis occurs in endemic foci in the Philippines where pork, beef, and other meat products are consumed raw or inadequately cooked. Although prevalence rates of 10–15% have been reported in these areas (Arambulo *et al*, 1976), there still exists a big gap in knowledge concerning the frequency of human taeniasis in the country. Surveys have not been very comprehensive and routine diagnostic examinations, as expected, have limited coverage.

Like in other countries, studies show that *Taenia saginata* is the dominant species and *T. solium* is the less common tapeworm in the Philippines (Hinz, 1985; Cabrera, 1977). At present, patients diagnosed as having taeniasis seek treatment from either private or government clinics and hospitals. However, most local physicians prescribe broad spectrum anthelmintics which are readily obtained from pharmaceutical outlets. Almost all of the recommended drugs for the treatment of taeniasis are not available to the private practitioners and the general public.

## STUDIES ON THE TREATMENT OF TAENIASIS IN THE PHILIPPINES

### Quinacrine (Atabrine)

In 1961, Cabrera and Yogore treated 16 cases of taeniasis using quinacrine which, aside from being an effective anti-malarial, has also been

demonstrated to be useful in the management of other parasitic infections. The authors first used this drug in 1949 and continued its routine use until the mid-1970s (Cabrera and Yogore, 1961; Chanco, 1970).

Patients were placed on liquid diets 24 hours before treatment and given a cleansing enema at bedtime. A combination of 2 tablets quinacrine (0.1 g/tab) and 2 tablets of sodium bicarbonate (0.3 g/tab) were administered at 2 minute intervals. After 2 hours, the patients were asked to take 25–30 g magnesium sulphate. The authors reported a cure rate of 93.7%, with one case considered a failure because the scolex was not recovered after the single course of treatment. Out of the 16 cases, only two were diagnosed to be taeniasis solium.

### Bithionol (Bitin)

Although bithionol had been used earlier in the management of paragonimiasis, it was first evaluated in the treatment of taeniasis in the Philippines in 1973. Forty cases of taeniasis saginata from Leyte province were treated with bithionol. After one day on a liquid diet, the patients were given two doses of 5 tablets (200 mg/tab) of bithionol at 30 minute intervals for a total dose of 2 g. This was followed by a saline purgative (30 g magnesium sulfate) two hours later. Fourteen patients expelled complete strobila with scolices, while scolices were not recovered from the remaining 26 cases. Follow-

up treatment after 3-6 months revealed two patients passing tapeworm segments. If these two are considered treatment failures, the cure rate is 95%; if they are reinfections, the cure rate would be 100% (Cabrera, 1973).

Another study reported 60 cases of *T. saginata* treated with bithionol (Arambulo *et al.*, 1976). Tapeworms were expelled from 51 (85%) cases: complete with strobila and scolices from 14 (27.5%); without the scolices from 33 (64.7%); complete and incomplete from 4 (7.8%) cases with multiple worm infections.

### Mebendazole

As a broad spectrum anthelmintic against intestinal nematodes, mebendazole was also tried in the treatment of taeniasis. Forty-one diagnosed cases of taeniasis saginata were given 3 mebendazole tablets (100 g/tab) twice a day for 3 consecutive days for a total of 1.8 g. Patients were not given a liquid diet. A saline purge of magnesium sulfate was administered 2 days after drug treatment.

Of the 41 cases treated, 33 (84.62%) claimed to have expelled the worm, while 6 (15.3%) did not notice worm expulsion. The drug acted as a taeniocide and the worms were expelled either as degenerated boluses or fragmented segments (Arambulo *et al.*, 1978).

### Praziquantel

The Department of Parasitology at the College of Public Health has been providing consultative services to both government and private physicians and hospitals in the diagnosis and management of parasitic diseases. Taeniasis is one of these diseases and in the treatment of this cestode infection, bithionol has always been the first drug of choice; however, because of the unavailability of bithionol, praziquantel has become the standard drug for the last 5 years.

Most of the patients referred to the department come from the Philippine General Hospital, the teaching hospital of the University of the Philippines, Manila. For purposes of this review, 20 cases of taeniasis saginata have been identified from records of the department.

The 20 cases were diagnosed to have *T. saginata* infection after examination of gravid

segments. The department's protocol requires each patient to collect and submit tapeworm gravid segments for species identification before treatment. The patient follows a liquid diet for at least 24 hours before drug administration. Praziquantel is given at a dose of 20 mg/kg body weight per dose for two doses. On treatment day, the patient is instructed to take the first dose of drug at home early in the morning. The second dose is administered 3-4 hours later at the College of Public Health.

Two hours after taking the second dose, the patient is given 30 g magnesium sulfate powder dissolved in half a glassful of water. All stools passed during the next 24 hours are examined for the worm. Criteria for cure includes recovery of the scolex and in case of nonrecovery, follow-up stool examination is scheduled 3-6 months after treatment (Yokogawa *et al.*, 1962; Nagahana *et al.*, 1966).

Of the 20 cases of *T. saginata* infection included in this study, there were 4 females and 16 males (Table 1). Their ages ranged from 19 to 56 years, with a mean age of 33.55 years. All gave a history of passing gravid proglottids for a period of from one month to 12 years (mean: 3.37 years). Eight had received previous treatment: 4 with mebendazole, 1 with pyrantel pamoate, and 3 could not remember the prescribed anthelmintic.

For this study, 3 cases (#1, #2, #3) were given bithionol and 17 (numbered 4 through 20) were given praziquantel. Worms were expelled in 18 cases, but the scolex was recovered in only 6. No segments were recovered from cases #4 and #7 up to 3 days post-treatment. Case #7, however, admitted to moving his bowels after taking the first dose of praziquantel at home and before he went to the College of Public Health. Of the 12 patients expelling worms without scolices, only 3 reported for follow-up after 3-6 months and they gave no history of reappearance of segments. Case #20 received treatment less than one month prior to writing, so there is no follow-up report. The other 8 patients are considered lost to follow-up. Even though all patients had been instructed to return after 3 months or when segments reappeared, most of these 8 cases are from municipalities outside Metro-Manila and went back to the hometowns after treatment.

## TAENIASIS TREATMENT IN THE PHILIPPINES

Table 1

Treatment of taeniasis saginata with bithionol and praziquantel.

Case No.	Age (years)	Sex	Duration of passing segments	Previous treatment	Drug given	Worm expelled		Follow-up after 3-6 mos	
						Strobilla	Scolex	Stool exam	History of passing segment
1	28	M	3 yrs	Atabrine	Bithionol	(+)	(+)		
2	51	M	12 yrs	Unknown drug	Bithionol	(+)	(-)	ND	ND
3	37	M	2 yrs	Pyrantel pamoate	Bithionol	(+)	(-)	ND	ND
4	44	F	10 yrs	None	Prazi-quantel	(-)	(-)	ND	ND
5	18	F	1 yr	None	"	(+)	(+)		
6	22	M	11 mos	None	"	(+)	(-)		(-)
7	39	M	6 yrs	Unknown drug	"	(-)	(-)	ND	ND
8	28	F	2 yrs	None	"	(+)	(-)	(-)	(-)
9	32	M	-	-	"	(+)	(+)		
10	36	M	-	-	"	(+)	(+)		
11	42	M	-	-	"	(+)	(+)		
12	45	M	-	-	"	(+)	(-)		(-)
13	32	M	6 mos	Mebendazole	"	(+)	(-)	ND	ND
14	21	M	-	None	"	(+)	(-)	ND	ND
15	29	M	1 mo	Mebendazole	"	(+)	(-)	ND	ND
16	35	M	4 yrs	"	"	(+)	(+)		
17	38	M	2 mos	None	"	(+)	(-)	ND	ND
18	32	F	-	None	"	(+)	(-)	ND	ND
19	25	M	8 mos	Mebendazole	"	(+)	(-)	ND	ND
20	36	M	1 yr	Unknown drug	"	(+)	(-)	Less than a month treat	than a after ment

ND - Not done

The scolex was recovered in one of the three cases treated with bithionol (33.33% cure rate). Scolices were found in 5 of 17 treated with praziquantel, while 3 remained negative for segments for 3-6 months post-treatment (47.06% cure rate). However, if the 7 cases who were

treated with praziquantel and expelled segments, but did not submit to follow-up because of non-reappearance of segments, were to be considered cured, then the cure rate for praziquantel could go up to 88.24%. No significant side effects from either drug were reported.

This review also reports the case of a 2 year old girl diagnosed with *Dipylidium caninum* which was expelled after treatment with praziquantel.

Results of this study confirm the findings of Fan *et al* (1986) that praziquantel is highly effective against tapeworm infection. Fan and others, however, suggest the use of this drug in a single dose (Schenone *et al*, 1979) whereas experience at the Department of Parasitology makes use of two divided doses much like the regimen for the treatment of schistosomiasis.

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