

STUDIES OF HUMAN STRONGYLOIDIASIS

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SUMÁRIO

1. Estrongiloidíase foi encontrada em 15,5% dos 1000 pacientes estudados da população geral de Salvador — Bahia, revelando-se portanto, ser uma verminose prevalente nesta amostra da classe média.
2. Entre os 155 pacientes afetados, 90% apresentavam intercorrência de outras verminoses. Nos 10% de portadores de estrongiloidíase isoladamente, foi detectada eosinofilia de 6% a 15%.
3. Sugere-se que a técnica de Baermann-Moraes deva ser feita de rotina em todos pacientes com sintomatologia gastrointestinal inespecífica, e/ou eosinofilia, especialmente em adultos jovens.
4. Thiabendazol (50mg/kg de peso) é a droga de eleição para tratamento de estrongiloidíase. O esquema terapêutico, dividindo-se a dose total, em 3 dias consecutivos apresentou os melhores resultados. A taxa de cura após o primeiro tratamento foi de 92%.

5. Metoclopramida (10mg/d) mostrou-se eficaz, quando administrado concomitantemente, na supressão dos principais efeitos colaterais adversos do tratamento pelo Thiabendazol.

INTRODUCTION

The first aim of this paper is to report the prevalence of strongyloidiasis in 1000 patients among the general population in Salvador - Bahia.

Strongyloidiasis in an endemic human verminosis, prevalent in tropical countries (Veronesi 12; Bras et al. 3) may sometimes assume a very severe clinical picture. It can cause death, under certain circumstances (Behmer et al. 2; T. Cruz et al. 6). Despite its high prevalence strongyloidiasis is often neglected in our country - the small number of papers published about it in Bahia does not correspond to its clinical importance. There has been contradiction as to incidence, probably due to inaccuracy of the coprologic method utilized

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for detection of the *Strongyloides stercoralis*. In two recent papers Machado da Silva (1966) and Farias (1972) showed a higher prevalence of this verminosis, among young scholars from Salvador - Bahia, using a more appropriate technique for searching *Strongyloides stercoralis* in stools.

Thus, it seemed important to us to investigate the prevalence of this helminthiasis among adult ambulatory patients in a significant sample from the general population in Salvador - Bahia. Moreover, the efficiency of Thiabendazole was tested following three different therapeutic schemes, in the patients with positive stools for *Strongyloides stercoralis*.

MATERIAL AND METHOD

One thousand adult patients from the general population of Salvador affiliated to an association of the government worker*, were submitted to physical examination and laboratorial evaluation from January 1972 through January 1974. Besides the plain coprologic examination the Baermann Moraes' technique was systematically performed to search for *Strongyloides stercoralis* larvae in stools eliminated in the same day. Differential diagnosis was made with other helminthic larvae whenever necessary. White blood cells count was in-

variably performed in all patients with positive stool examination for *Strongyloides stercoralis*. All symptoms presented by each patient were recorded in every individual chart.

It is noteworthy that the sample studied from the so-called middle class of Salvador, Capital State of Bahia (Brazil) was a randomized group of ambulatory patients with ages ranging from 12 to 80 years old. They looked for medical help for any complaint, either digestive or not.

The affected patients were divided into three groups, in order to check the therapeutic efficacy of THIABENDAZOLE, namely:

Group n° 1: was given Thiabendazole in a single total dosis of 50mg/kg of body weight.

Group n° 2: was given Thiabendazole divided into 3 consecutive days (the same dosis of group n° 1).

Group n° 3: the same scheme of the group n° 2, plus METOCLOPRAMIDE (10 mg/day per os, or injected I. M.).

All signs and symptoms were recorded to assess the amount of side effects arisen during the treatment. A new stool examination was done by means of the Baermann-Moraes' technique as control of cure in every treated patient.

RESULTS

I. As to prevalence

It was found that 155 out of 1000 examined patients were eliminating *Strongyloides stercoralis* larvae (15,5% of positivity).

Among these affected patients there was no significant differ-

ence related to either — color of skin or sex. In other words, the incidence of positivity was about equal in both sexes and in the races.

In regard to age, it was found the highest prevalence in youngs ranging from 12 to 32 years, according to the following figures (Table 1).

TABLE I

AGE GROUPS AND PREVALENCE OF STRONGYLOIDIASIS AMONG 1000 PATIENTS OF SALVADOR — BAHIA.

Age	N.º of affected	Nº. examined	Percentual rate
12 to 21	86	438	19,4%
22 to 31	55	370	14,8%
32 to 41	09	75	12,0%
42 to 51	03	60	5,0%
52 to 61	01	23	4,3%
62 to 71	01	25	4,0%
72 to 81	0	09	0%

About ninety per cent of cases with strongyloidiasis (139 out of 155 affected patients) were also eliminating in their stools ova from other worms, namely: *Ascaris lumbricoides*, *Trichocephalus trichuris*, *Ancilostoma duodenale*, *Necator americanus* and sometimes *Schistosoma mansoni*.

Seventy-six (76) patients out of the 155 eliminating larvae of *Strongyloides stercoralis* were asymptomatics. The remaining 79 patients presented a variable spe-

ctrum of symptoms, mainly digestive ones, such as heartburn, nausea, colic pain, obstipation, flutulency and diarrhea. There was a consistent eosinophilia in all positive cases of isolated strongyloidiasis (i. e. *Strongyloides stercoralis* alone, without other round worms). The mentioned eosinophilia ranged from 16% to 8% in an average of 8%.

II. As to treatment

The Table 2 summarizes the occurrence of symptoms during the treatment.

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TABLE 2

MAIN SYMPTOMS REGISTERED IN THE THREE GROUPS OF PATIENTS RECEIVING THIABENDAZOLE.

Complaints . .	Group n ^o . 1 THIABEN- DAZOLE (50 mg/kg) total dosis in a day	Group n ^o . 2 THIABEN- DAZOLE (50 mg/kg) total dosis in 3 days	Group n ^o . 3 THIABEN- DAZOLE (same dosis as Group n ^o . 2 + METOCLO- PRAMIDE (10 mg/day)
Dizziness	36	19	2
Nausea	35	21	1
Vomiting	24	12	0
Run-down feeling	35	20	0
Sialorrhea	11	7	3
Sleepness	3	2	27
Fainting	2	1	0
Abdominal colic	19	9	3
N ^o . of patients	50	50	55

It is evident that the side effects were more frequent in patients who received the total dosis of Thiabendazole in one day than the same dosis divided into three consecutive days.

On the other hand, it was obvious that the administration of

METOCLOPRAMIDA worked efficiently to prevent unpleasant effects caused by Thiabendazole. As to therapeutic action, the following figures indicative of the suppression of *Strongyloides stercoralis* larvae in stools were found:

TABLE 3

CONTROL OF CURE AFTER THE FIRST TREATMENT WITH THIABENDAZOLE

Baermann-Moraes Test	Group n ^o . 1	Group n ^o . 2	Group n ^o . 3
Negative	46 (92%)	49 (90%)	51 (92,7%)
Positive	04 (8%)	05 (10%)	04 (7,3%)
Total of patients	50	50	55
Standard deviation	1.08	1.11	1.11

The anti-strongyloides efficiency of Thiabendazole did not suffer any significant advantage in any tested group. The therapeutic effect of Thiabendazole in curing strongyloidiasis, based upon suppression of larvae in stools, was around 92% (91,5 + 1.2 or 1.5) in all 3 tested groups.

DISCUSSION

I. As to PREVALENCE

Data on prevalence of strongyloidiasis are not frequent in the capital state of Bahia. Among the few papers dealing with that subject it is quite evident that the figures registered of prevalence of human strongyloidiasis in Salvador — Bahia are not consistent. The Table 4 gives an account of the rates found by several investigators.

Such a diversity of results may be explained on basis of the method of diagnosis applied and/or the sample studied. It is accepted nowadays that the search

for worm larvae preconized by Baermann and modified by Moraes is the most adequate method for diagnosis of strongyloidiasis. In some papers the plain coprologic method utilized for diagnosis of strongyloidiasis failed to reveal actual rate (4, 10).

Several previous studies dealt with strongyloidiasis in the course of coprologic inquiries for intestinal helminthiasis; they usually did not care specifically about strongyloidiasis. It is noteworthy that some of the authors studied the prevalence in a hospitalized population (5). On the other hand, two accurate recent reports (7, 8) applied the Baermann—Moraes' technique and found, higher rates of that verminosis in Salvador. Farias (7) studied the prevalence of strongyloidiasis among children from public schools, in several sections of Salvador. The age of these children varied from 7 to 14 years. The lowest prevalence was found in the Mares section

TABLE 4

PREVIOUS STUDIES ABOUT THE PREVALENCE OF STRONGYLOIDIASIS IN SALVADOR — BAHIA.

AUTHOR	DATE	Nº. OF PATIENTS	METHOD	RATE
TORRES	1917	1213	Plain stool examination	8,0%
CARVALHO	1926	16042	DITTO	0,22%
AUDIFACE	1943	706	Not mentioned	2,9%
COUTINHO & SILVANY	1950	500	Hoffman, Pons & Janer	13,4%
SILVA Jr	1966	—	Not mentioned	2,8%
MACHADO DA SILVA	1966	250	Baermann-Moraes	10,0%
FARIAS	1972	1521	Baermann-Moraes	13,3%

(= 10%) and the highest one in the section called Itapoan = 39,4%. The average rate was 23%.

In our study, we dealt with adults, aged 12 to 80 years, non hospitalized patients in a randomized sample of the general population of Salvador, from the so-called middle class. We found 15,5% of infected patients with *S. stercoralis*, but, considering that the highest prevalence is among children, we may admit that the actual rate is higher. It may reach much higher rates in the greater Salvador, by adding samples from suburban sections.

Thus, it is strongly suggested, hereby, that the test of Baermann-Moraes be routinely ordered, in all patient with gastro-intestinal symptoms related to or

compatible with strongyloidiasis. Due to the high risk that this very prevalent verminosis may offer, we must include this diagnosis for patients with non specific or general symptoms, such as otherwise unexplained loss weight. Moreover any patient with eosinophilia should have stools examined by the Baermann-Moraes technique.

II. As to treatment

Thiabendazole is a synthetic succedaneous of Gentian violet and Ditriazanine, in the treatment of strongyloidiasis.

Thiabendazole is nowadays the drug of choice for that helminthiasis (9). The therapeutic efficiency, as judged from the rate of negativation of the Baermann-Moraes examination after the first treatment, is consistently around 92%. We consider

that the scheme of Thiabendazole in the total dose of 50 mg/kg/weight per os, is more suitable when divided into 3 consecutive days. It was seen in our series (group A x group B) that Thiabendazole fraccionated into 3 days brings about less adverse side effects than when given as a single total dosis. It is advisable to repeat the treatment a week later to those unsuccessful cases.

The concomitant administration of METOCLOPRAMIDE in the dosis of 10 mg/day, minimizes the frequency and intensity of side-effects caused by Thiabendazole. Therefore, it is recommended to give metoclopramide prophylactically to sensitive patients in order to avoid undesirable side effects of Thiabendazole.

SUMMARY AND CONCLUSIONS STUDIES ABOUT HUMAN STRONGYLOIDIASIS

- Strongyloidiasis was found to be a prevalent verminosis in Salvador-Bahia with the rate of 15,5% in a sample of 1000 patients of the general population, belonging to the so-called middle class.
- Among these 155 adult-patients, 90% were bearing other verminosis, where as 10% presented strongyloidiasis solely. This latter group showed eosinophilia ranging from 6 to 15%.
- The Baermann-Moraes technique must be routinely performed in all patients with inespecific gastro-intestinal symptoms and/

or eosinophilia, specially in youngsters.

- Thiabendazole (50 mg/kg) is the drug of choice for treatment of strongyloidiasis. The scheme dividing the total dosis into three consecutive days is the preferred one. The rate of cure after the first treatment is about 92%.
- Metoclopramide (10 mg/day) is useful when given concomitantly to Thiabendazole to suppress the main adverse side effects of the treatment.

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