

## THE EFFECT OF ORAL TREATMENT WITH PREDNISONE ON *T.* *CRUZI* PARASITEMIA OF PATIENTS WITH CHRONIC CHAGAS' HEART DISEASE

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### SUMMARY

Patients with chronic form of chagasic cardiopathy have been treated with 60 mg of Prednisone per day, orally, during one week. A search for circulating trypanosomes have been done before and during steroid treatment. The methods used to detect circulating *T. cruzi* were: xenodiagnosis, mice inoculation and hemocultures in the proper medium.

Our results indicate practically the same parasitism before and during treatment and therefore an absence of reacutization with steroid therapy for one week.

### INTRODUCTION

The initial observation on the effects of cortisone on *T. cruzi* parasitemia of animals chronically infected, has been made by Wolf et al.<sup>12</sup>. They reported a very high increase of the number of circulating trypanosomes and very severe infection in Rhesus monkeys after treatment with cortisone<sup>12</sup>.

Several works dealing with the same subject display different conclusions. Thus, there are references showing that cortisone is an aggravating factor in experimental Chagas' disease in rats<sup>1, 8, 10</sup> although this fact has not been confirmed by other work<sup>9</sup>.

The only work on the effect of corticosteroid in human Chagas' disease was done by Gould et al.<sup>5</sup> who injected in patients a single intravenous dose of Prednisone. They performed xenodiagnosis as method to detect the parasitemia and their results suggested that corticosteroid was not related to increased trypanosemia.

The purpose of this work was to study the *T. cruzi* parasitemia of patients with chronic Chagas' cardiopathy after oral treatment with

corticosteroid. The patients were treated with high doses of Prednisone although during a relatively short time (one week). Besides xenodiagnosis, mice inoculation and blood cultures were done as an attempt to make a better detection of the circulating trypanosomes.

### MATERIAL AND METHODS

All patients treated with Prednisone were admitted to the University Hospital, Ribeirão Preto. They presented a positive MACHADO-GUERREIRO complement fixation test and revealed signs of chagasic form of heart disease.

The work was done in three phases.

Phase one — A) Five patients have had xenodiagnosis performed by the classic method<sup>5</sup>. The xenodiagnosis were in number of twenty for each patients. As in each test, five triatomid nymphs have bitten the host, each patient was exposed to one hundred bugs.

Phase two — B) Five other patients with chronic chagasic cardiopathy received ten xenodiagnosis before and ten after oral treatment with 60 mg of Prednisone daily. The xenodiagnosis were done twice a day and those during steroid treatment were begun twenty-four hours after the beginning of therapy.

At the end of the seventh day of drug ingestion blood was drawn by venous puncture of the five chagasic patients with Prednisone therapy. This blood was inoculated in mice intraperitoneally. Each animal received 0.2 ml of blood and each sample was inoculated in five mice. At the end of one week the animals were sacrificed and their blood examined with the purpose to find *T. cruzi*.

Phase three — C) The venous blood of fifteen patients with chronic chagasic cardiopathy were withdrawn and sowed in proper culture for *T. cruzi*'s growth, according to Warren's description<sup>11</sup>. Each patient had his blood sowed in 2.0 ml of culture medium. All patients received 60 mg of Prednisone and at the end of the fifth treatment day news blood samples were gotten and sowed in proper *T. cruzi* cultures. The material reading has been done fifteen and thirty days after incubation at 28°C.

## RESULTS

The results were shown in Tables I, II and III. During the first phase, patients with and without corticosteroid therapy were studied largely, in relation to the trypanosemia presence, using the xenodiagnosis as the detection method for circulating parasites. A very small number of triatomids exhibited infection. However, five patients out of ten examined, showed circulating trypanosomes. There was no suggestion of increased parasitism with oral Prednisone treatment.

During the second phase of our observation, the patients were utilized as their own controls and besides xenodiagnosis blood was gotten and inoculated in mice. Once more it has been found that steroid treatment did not change the parasitism of the chagasic patients.

The study of the table that summarizes the third phase of the experiment shows a higher number of positive hemocultures when the patients received Prednisone.

## DISCUSSION

It is well known that patients with chronic Chagas' disease have a very reduced parasitism<sup>4,7</sup>. Our present work, once more con-

TABLE I

Results of twenty xenodiagnosis — one hundred triatomid nymphs for each patient — in chronic chagasics with and without oral treatment with prednisone (60 mg per day during one week)

Patients without treatment					Patients with prednisone treatment				
Patient	Hospital number	Sex	Age	no. of positive triatomids	Patient	Hospital number	Sex	Age	no. of positive triatomids
M.T.A.	6913	♀	17	0	J.B.	37256	♂	39	0
A.G.S.	35062	♂	37	0	J.M.	38077	♂	35	1
M.M.	35138	♀	40	1	G.J.S.	34369	♀	26	0
W.F.	36741	♂	35	0	A.G.S.	35062	♂	37	1
P.P.T.	15955	♂	30	3	J.E.S.	34065	♀	21	2

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TABLE II

Results of ten xenodiagnosis and five mice inoculation using blood from each patient with chronic chagasic cardiopathy, before and after oral treatment with prednisone (60 mg per day during one week)

Patient	Before treatment					After treatment	
	Hospital number	Sex	Age	no. of positive triatomids	Mice inoculation	no. of positive triatomids	Mice inoculation
E.B.S.	86886	♂	58	0	0	0	0
M.R.S.	69921	♀	19	0	0	0	0
J.G.	21146	♀	56	0	0	0	0
N.M.	83600	♀	20	0	0	0	0
A.M.C.	82981	♀	51	0	0	0	0

TABLE III

Hemocultures for *T. cruzi* using blood from patients with chronic Chagas' heart disease, before and after oral treatment with prednisone (60 mg daily during 5 days)

Patient	Hospital number	Sex	Age	Hemoculture Before treatment			Hemoculture After treatment		
				1	2	3	1	2	3
A.M.C.	82981	♀	51	N	N	N	Pos.	N	N
M.R.F.	69921	♀	19	N	N	N	N	N	N
J.G.	21146	♀	56	N	N	N	N	N	N
N.M.	83600	♀	20	N	N	N	N	Pos.	N
E.B.S.	86886	♂	58	N	N	N	N	N	N
N.B.	87022	♀	27	N	N	N	N	N	N
G.S.F.	59899	♀	25	N	N	N	N	N	N
L.G.G.	59389	♂	53	N	N	N	Pos.	N	Pos.
J.A.	68607	♂	32	N	N	N	N	N	N
A.C.	88235	♂	27	N	N	N	N	N	N
A.P.	92424	♂	38	Pos.	N	N	N	N	N
M.O.J.	92463	♀	68	N	N	N	N	N	Pos.
M.N.D.	92608	♀	40	N	Pos.	N	N	Pos.	Pos.
M.S.	93017	♂	58	N	N	N	N	N	N
J.C.O.	81877	♂	34	N	N	N	N	N	N

firmed the above fact. When the repeated xenodiagnosis was used as the way to find parasites in the blood (total of two hundred tests) in patients with and without treatment, only in eight opportunities triatomids had been infected. However the search for circulating *T. cruzi* showed that 50% of the patients with chronic Chagas' disease had parasitemia. It is remarkable that in different work, MARTINS et al.<sup>6</sup> found parasitemia in 45% of the patients<sup>6</sup> while CHIARI & BRENER<sup>3</sup> found circulating parasites in 31.4% of the cases<sup>3</sup>; both using xenodiagnosis as method.

The remaining impression is that the parasitemia has little quantitative importance and does not give clinical externalization.

The mouse inoculation associated with the xenodiagnosis did not show parasitemia, with and without steroid treatment. In that phase we did not demonstrate blood parasites in any of the five patients studied.

Special considerations should be made in relation to the hemocultures as the method for *T. cruzi*'s isolation and growth. Recent studies have shown that the culture is better than xenodiagnosis, when confronted at the same time and in equal number<sup>2</sup>. Besides this fact the culture is much easier to be done.

In six out of fifteen patients studied, parasitemia was found. In this of the work the greater number of positive hemocultures happened after corticosteroid treatment. In 45 hemocultures that were done we obtained seven positives after Prednisone therapy.

The problem of a possible Chagas' disease reactivation with steroid treatment is not finished. In two initial phases of our study, the Prednisone did not change the number of circulating *T. cruzi*. However with the use of hemocultures some suggestion of an increased parasitemia may be thought when steroid was given.

Our impression is that during the observation period (one week) there is no greater seriousness with the oral use of Prednisone in chronic chagasic. It is interesting to observe that during a certain phase of the experimental knowledge about the subject precaution was suggested with steroid utilization in Chagas' disease endemic areas<sup>8</sup>. It is our impression that this precaution is excessive.

Our work, showing the absence of risk with Prednisone treatment will stimulate observations in other medical centers, increasing the knowledge about the problem. Also, the prolonged observation and time of steroid treatment would bring more expressive and conclusive results.

#### RESUMO

#### *Efeito de tratamento oral com Prednisona sobre a parasitemia do T. cruzi em pacientes com cardiopatia chagásica crônica*

Pacientes com cardiopatia chagásica crônica foram estudados em relação a parasitemia e a seguir tratados com prednisona oral na dose de 60 mg ao dia, durante uma semana. Após o fim do tratamento a pesquisa de *T. cruzi* foi repetida. Os métodos de procura de parasitas foram: xenodiagnóstico, inoculação em camundongos e hemoculturas em meio adequado.

Nossos resultados indicam quase que o mesmo parasitismo antes e depois do tratamento, não se sugerindo reagudiação da moléstia com a corticoidoterapia durante uma semana.

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