

MATERNAL CHAGAS' INFECTION AND PREMATUREITY

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SUMMARY

A case-control epidemiologic study was made of 249 premature live births with unknown cause of prematurity and an equal number of mature infants matched by sex and birth order of the infant and age of the mother. No association was found between prematurity and maternal Chagas' infection. Comments are made about methodological aspects.

INTRODUCTION

The possibility of congenital transmission of Chagas' disease was established with the pioneer observation of DAO⁴ followed by LISBOA⁶ and HOWARD⁵, among others. However, little is known about the characteristics of evolution of infants born to mothers with chagasic infection. Many of the reported studies on prematurity fail to take into account differences between study and control groups for such important factors as maternal age, birth order and sex. Too often, therefore, the associations found with presumed etiologic factors are partially or completely due to this lack of comparability of cases and controls. Furthermore, a great number of the studies include premature births with known causes; as a result, they consider not only the epidemiology of unexplained low birth weight but also the epidemiology of multiple pregnancy, placenta previa, premature separation of placenta, eclampsia, and so on.

MATERIAL AND METHODS

The present investigation was conducted at the "Hospital das Clínicas da Faculdade

de Medicina da Universidade de São Paulo", and included 249 live births weighing 2,500 grams or less. So, in this present study prematurity is assumed to be a synonym of low birth weight. The study did not include cases of multiple pregnancy, placenta previa, premature separation of placenta, eclampsia and hypertension. For each premature infant a mature infant was selected as control, matched by sex and birth order of the infant as well as age of the mother. For birth order was adopted the criterion of selection according to three groups: none, one or two, and three and more previous gestations. However, whenever possible closer birth order was sought. For maternal age the controls were selected admitting a maximum absolute difference of five years.

The diagnosis of *Trypanosoma cruzi* infection was performed using the indirect immunofluorescent test².

RESULTS

Of the 249 premature infants studied, 113 were males and 136 females. The controls were identical to the cases with respect to sex, as a result of the matching procedure.

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The distribution according to age is shown in Table I, the mean was 25.5 years and 25.6 respectively for cases and controls. Table II shows the frequency distribution of number of gestations.

Results concerning other factors — cigarette smoking, marital status, employment during pregnancy, maternal height and weight, prenatal care, birth interval, and outcome of previous pregnancies — were the subject of another publication³. Since there is no evidence for considering these factors as able to give a spurious association between maternal *Trypanosoma cruzi* infection and prematurity, the results of that infection are analysed separately without regard to the other factors investigated.

The prevalence rate of *Trypanosoma cruzi* infection was around 9% for the study group and 7% for the controls (Table III). Since the matched chi square test was equal to 0.265, the hypothesis of no association between low birth weight and maternal Chagas' infection was not rejected (P-value = 0.6067).

DISCUSSION

In the present study no significant difference was found between mothers of premature infants and control mothers with respect to the prevalence of Chagas' infection.

TABLE I

Age of mothers of premature infants and matched controls

Age (year)	Premature		Control	
	no.	%	no.	%
14	2	0.8	—	—
15	53	21.3	51	20.5
20	81	32.5	81	32.5
25	54	21.7	61	24.5
30	29	11.6	29	11.6
35	25	10.0	22	8.8
40	5	2.0	5	2.0
Total	249	99.9	249	99.9

It must be clarified that this result does not deny the congenital Chagas' disease, which has low birth weight as an important manifestation^{5,6}. It does show that single maternal infection with *Trypanosoma cruzi*, as a single factor, could not be found associated with prematurity independently or not of the presence of congenital Chagas' disease.

It is also important to point out that based on the estimate of a 2.5% prevalence rate of *Trypanosoma cruzi* infection among pregnant women in the same hospital¹ we would need around 1,400 observations in each group in order to detect a relative risk = 1.5, with a type I error = 0.05 and a type II error = 0.20. Therefore, with just 249 observations, the type II error is certainly greater than 0.20. Even considering that in the present study the prevalence rate, among 498 observations, was around 8%, the number of observations is small to demonstrate an association between maternal chagasic infection and prematurity according to the above assumptions. Therefore, it must be borne in mind that problems similar to this can explain many of the different results about specific etiological factors in prematurity.

TABLE II

Number of previous gestations in mothers of premature infants and matched controls

No. of gestations	Premature		Control	
	no.	%	no.	%
None	74	29.7	74	29.7
1	46	18.5	39	15.7
2	26	10.4	33	13.3
3	23	9.2	19	7.6
4	21	8.4	22	8.8
5	21	8.4	21	8.4
6	10	4.0	11	4.4
7	6	2.4	6	2.4
8	7	2.8	6	2.4
9	5	2.0	7	2.8
10 and over	10	4.0	11	4.4
Total	249	99.8	249	99.9

TABLE III

Paired distribution of mothers of premature infants and controls according to presence of Chagas' infection

Group		Premature		Total
		With Chagas' infection	Free of Chagas' infection	
Control	With Chagas' infection	3	15	18
	Free of Chagas' infection	19	212	231
Total		22	227	249

RESUMO

Infeção chagásica materna e prematuridade

Um estudo epidemiológico do tipo retrospectivo (caso-controle) foi realizado utilizando-se 249 prematuros nativos com causa desconhecida de prematuridade e igual número de controles pareados segundo sexo e ordem de nascimento do recém-nascido e idade materna. Não se encontrou associação entre insuficiência ponderal do recém-nascido e infecção chagásica materna. São feitos comentários sobre alguns aspectos metodológicos.

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