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A STUDY ON GIARDIASIS IN PREGNANCY

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ABSTRACT

In this study 404 pregnant women in Islamshahr, a district southwest of Tehran, were examined for giardiasis. Results showed 7.92% of them to be positive. Abdominal pain, nausea and diarrhea were observed as the most common symptoms in infected mothers. Results also indicated that hematological parameters and weight gain of infected pregnant women did not differ significantly from those without any parasitic infection. Also, birthweight, length and head circumference of the neonates of these two groups of mothers did not show any significant difference.

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INTRODUCTION

Giardia lamblia is a flagellate protozoan organism with a world-wide distribution. The trophozoite form of this parasite lives intraluminally in the small intestine of the mammalian host. Infection with *Giardia lamblia* cysts may occur via fecally contaminated food or water. Direct fecal-oral person to person infection, due to poor personal hygienic conditions has been reported. The major significant complication for pregnant mothers with symptomatic giardiasis is malabsorption and dehydration during a period of accentuated nutritional requirements.[7] Intrauterine growth retardation may result from nutritional deprivation as a consequence of dehydration and protein loss. Islam et al.[4] studied *Giardia lamblia* infections in a cohort of Bangladeshi mothers. In other countries investigators such as Kreutner et al.[5] Rotblatt,[9] D'Alauro et al,[1] and Ljungstrom et al.[6] also studied giardia infection during pregnancy. Giardia infection is also widespread throughout Iran but there have been only a few attempts to document the rate of infection among pregnant women. This study has mainly been designed to provide a baseline study on giardia infection in pregnant women and to see whether this parasite can contribute to anemia in this group or has any adverse effects on the neonate.

MATERIALS AND METHODS

From February 1993 to September 1993, stool samples were collected from pregnant women on their visit to antenatal clinics in Islamshahr, located southwest of Tehran. Three stool samples–at the first examination, in the last trimester and after delivery–were collected from each woman and transported to the parasitology laboratory. All of the specimens were brought fresh in clean containers and examined within a day of being passed. Direct and formalin-ether concentration methods were used for diagnosis of the parasite. In addition, hemoglobin and hematocrit values were also measured at least once in the last trimester. After delivery, weight, length and head circumference of the neonates were measured. Finally, for statistical analysis, T-student and chi-square tests were used.

RESULTS

Analysis of stool specimens collected from 404 pregnant women attending antenatal clinics in Islamshahr indicated that 32 (7.92%) of them were infected with giardia.

Table I shows the most common symptoms of giardiasis in pregnant women, i.e. abdominal pain (31%), followed by nausea (28%) and diarrhea (15.6%). Statistical differences

Table I. Gastrointestinal symptoms among pregnant women infected with *Giardia lamblia* in Islamshahr.

Gastrointestinal symptoms	Women infected with *Giardia lamblia* n= 32		Women without any parasitic infection n= 190		P at 5% level
	No.	%	No.	%	
Diarrhea	5	15.6	1	0.5	+
Constipation	4	12.5	12	6	-
Nausea	9	28	43	22.6	-
Vomiting	3	9	21	11	-
Abdominal pain	10	31	25	13	+
Bloating	4	12.5	16	8.4	-
Anorexia	3	9	18	9	-

Table II. Some hematological parameters and weight gain in pregnant women in Islamshahr.

Parameter	Women infected with *Giardia lamblia* (Mean±S.D)	Women without any parasitic infection (Mean±S.D)
Hemoglobin (gr/dL)	12.75±1.44	12.92±1.42
Hematocrit (%)	39.20±3.27	38.60±4.7
MCHC (gr/L)	32.36±0.70	33.30±1.84
Weight gain during last trimester (gr)	3025±2301	3804±2044

Table III. Mean and standard deviation of neonatal birth weight, length and head circumference in Islamshahr.

Parameter	Mothers infected with *Giardia lamblia* (Mean±S.D)	Mothers without any parasitic infection (Mean±S.D)
Birthweight (gr)	3172±409	3533±439
Birth length (cm)	50.10±1.28	50.17±1.80
Birth head circumference (cm)	34.10±0.77	35.25±7.40

of abdominal pain and diarrhea between pregnant women infected with giardia and those without any parasitic infestation were significant ($P<0.05$).

Mean and standard deviation for hemoglobin, hematocrit and MCHC during the pregnancy period and weight gain during the last trimester in pregnant women with giardiasis and those without any parasitic infection are shown in Table II. No significant differences were observed concerning hemoglobin, hematocrit, MCHC and weight gain between the two groups.

Table III shows means and standard deviations of birthweight, length and head circumference of neonates born from mothers with and those without giardiasis. Statistical differences between them were not significant.

DISCUSSION

The infection rate of giardiasis in pregnant women was 7.92%. This result is in accordance with D'Alauro's study in Thailand.[1]

Diarrhea and abdominal pain were found to be the most common and significant gastrointestinal symptoms among pregnant women infected with *Giardia lamblia*. Usually malabsorption and dehydration are the major complications faced by pregnant mothers with symptomatic giardiasis. A negative nutritional balance may occur subsequent to the malabsorption associated with water and protein loss. In this study, only 33.3% of infected mothers showed less than 3000 grams weight gain during the last trimester. The mean weight gain of infected mothers was recorded to be about 3025 grams which is much less than D'Alauro's results.[1] But maternal weight gain, hemoglobin, hematocrit and MCHC values of infected mothers–compared to those without any parasitic infection—did not show any significant differences. The mean hematocrit level of mothers with giardiasis was 33.7% and 39.2% in D'Alauro's and our results, respectively. However, 10.3% of infected mothers had a hematocrit level lower than 33%. In this regard some investigators discussed a correlation between giardiasis and anemia associated with iron or vitamin B_{12} deficiencies.[2,3,8] According to Naik's study, hematological indices were not influenced by giardiasis.[8] This result was accordant with ours. Indeed our results indicated that, since only 15.6% of pregnant women have suffered from diarrhea and the majority of them not from acute symptomatic giardiasis, and also due to good nutritional intake of mothers during pregnancy, infection was unable to have a serious effect on mothers and their infants. Birth-weight, length and head circumference of neonates born to infected mothers did not differ significantly, compared to those without any parasitic infection. But in symptomatic giardiasis, intrauterine growth retardation which may occur due to negative nutritional balance should be taken into consideration. In such cases, parenteral hydration and nutritional supplements, as well as chemotherapy for eradication of the infection should be applied. Paromomycin (25-30 mg/kg per day in three divided doses for five to ten days) is the drug of choice for treating acute symptomatic giardiasis in pregnant women.[5,9] Metronidazole, quinacrine and furazolidone, due to their adverse effects, are not recommended during pregnancy. However, for asymptomatic or minimally symptomatic pregnant patients, treatment is preferred to be applied as late as possible in pregnancy or post-partum period.

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