Comparative study of enteric parasites in pregnant and non pregnant out patients of the State Specialist Hospital Maiduguri, Nigeria

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Abstract: A comparative study of intestinal parasites of pregnant and non pregnant outpatients of State Specialist Hospital, Maiduguri was conducted between October and November 2008. A total of two hundred (200) stool samples (100 each from pregnant and non pregnant patients) were randomly collected and examined using the formol ether concentration technique. A total of 91 (45.5%) women were infected with; eggs of *Ascaris lumbricoides* 18(19.8%) and hookworm 8(8.8%); cysts of *Entamoeba coli* 13 (14.3); *Entamoeba* histolytica 20 (22.0%); *Giardia lamblia* 13 (14.3%); ova of *Taenia* 6 (6.6%); *Hymenolepis nana* 4(4.4%); *Trichuris trichura* 3 (3.3%) and *Schistosoma mansoni* 6 (6,6%). Though more pregnant women 47 (51.7%) were infected compared to non pregnant women 44 (48.4%), the difference was not statistically significant ($p>0.05$). The highest prevalence of infection was generally observed within the 15 and 25years age group which was statistically significant ($p<0.05$) from those of the other age groups.

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Introduction

Intestinal parasitic infections are a major health problem especially among women living in tropical regions such as Nigeria where there is poor sanitation and poverty. These parasites range from parasitic protozoans to helminths, and has been reported to be among the most prevalent human infections excluding malaria, and affect approximately one quarter of the world's population (Asinobi *et. al.*, 2007). The overall objective of the World Health Organization programme on maternal and child health is to improve it, since one out of two infant deaths occur during the first month of life (WHO, 1985).

In Northern Nigeria, teenage mothers have a death rate of 50-70 per 100 births, and is related the health of the mother both before and during pregnancy, (Mbanugo and Abazie, 2002).

In Nigeria comparative studies on enteric parasitic infections of pregnant and non pregnant women have received little or no adequate attention, despite their serious implications and thus the need for this study to determine and compare its prevalence among pregnant and non pregnant women out patients of the State Specialist Hospital Maiduguri, and to relate this to their age, with a view towards suggesting reduction methods.

Materials and Methods

Patients' consent and ethical consideration:

For this study, an approval was sought and obtained from the management and the State Specialist Hospital, and patients informed on the objectives, plan and merits of the study.

Stool collection, processing and examination:

A total of 200 fresh stool samples submitted between August and November 2008 by out patients of the State specialist Hospital, Maiduguri were examined using formol- ether concentration technique to identify parasitic ova and for cysts as described by Martinez, (1985) and Cheesbrough, (1987). 2grams of the fresh stool was emulsified in 7mls of 10% formalin in a centrifuge tube, mixed and strained using a wire sieve and the filtrate poured into a test tube to which 3mls of ether was added and mixed for 15seconds. The formol-ether suspension was then centrifuged at 1500g for one minute. The fatty plug was then loosened using an applicator stick and the centrifuge tube quickly inverted to discard the supernatant, allowing only a few drops of the sediment to remain, which was well mixed, and a drop of it placed on a clean glass slide, and added a drop of Lugols iodine to clarify cysts present and examined under a coverslip at x40 objective of the light microscope.

Variations based on age, and pregnant and non pregnant status of the women were analyzed statistically using the students paired t-test with significant "p" values equal to /or less than 0.05 (Graph Pad Instat Soft ware 1998).

Results

A survey of intestinal parasites of pregnant and non-pregnant women attending State Specialist Hospital Maiduguri, was conducted between August and November 2008. A total of 200 fresh stool samples from 100 each pregnant and non pregnant women out patients were randomly collected and following the formol-ether concentration technique 91 (45.5%) of the patients were infected; with *Ascaris lumbricoides* 18(19.8 %), *Taenia* species 6 (6.6 %), *Schistosoma mansoni* 6 (6.6 %), *Hymenolepis nana* 4(4.4%), hookworm eggs 8(8.8%) *Trichuris trichura* 3(3.3%), and protozoan cysts of *Entamoeba histolytica* 20(22.0%), *Entamoeba coli1* 3(14.3%) and *Giardia lamblia* 13(14.3%) (Table1).

Table 2 shows the prevalence of infection based on the age of the patients. Highest rates were generally observed for age brackets between 15 and 25 years and lowest rates in the group between 46 and 51 years.

Table 3 shows the prevalence of intestinal parasites among women patients based on their physiological status. Though more pregnant women 47(51.7%) were infected compared with non pregnant women 45(48.4%), it was not statistically significant (p>0.05).

Table1: Prevalence of intestinal parasites among 200 women out patients of State Specialist Hospital, Maiduguri.

Intestinal parasites isolated	No (%) of women Infected
Overall	91 (45.5)
Ascaris lumbricoides	18 (19.8)
Entamoeba histolytica	20 (22.0)
E. coli	13 (14.3)
Giardia lamblia	13 (14.3)
Schistosoma mansoni	6 (7.2)
Taenia spp.	6 (7.2)
Hymenolepis nana	4 (4.8)
Trichuris trichura	3 (3.6)
Hookworm ova	8 (8.8)

Table 2: Prevalence of intestinal parasites based on age and physiological status of out patients examined

Age group (years)	No (%) infected N=91	No (%) infected with;							
		A. lumbricoides	*T. trichura*	Hookworm	*S. mansoni*	*H. nana*	*Taenia*	*E. histolytica*	*E. coli*	*G. lamblia*
Age bracket:										
15-25	44(48.4)	10(22.7)	2(4.5)		4(9.0)	1(2.3)	-(00)	4(9.0)	11(25.0)	7(15.9)	5(11.4)
26-35	25(27.5)	4(16.0)	1(4.0)		3(12.0)	2(8.0)	2(8.0)	1(4.0)	5(20.0)	3(12.0)	4(16.0)
36-45	13(14.3)	3(23.1)	1(7.7)	-(00)	2(15.4)	2(15.4)	1(7.7)	2(15.4)	-(00)	2(15.4)	
46-51	9(9.9)	1(11.1)	-(00)	1(11.1)	-(00)	-(00)	-(00)	2(22.2)	3(33.3)	2(22.2)	
Physiological status:										
Pregnant	47(51.7)	10(21.3)	2(4.3)	2(4.3)	6(12.8)	1(2.1)	3(6.4)	12(25.5)	7(14.9)	4(8.5)	
Non Pregnant	44(48.4)	8(18.2)	1(2.3)	6(4.6)	0(00)	3(6.8)	3(6.8)	8(18.2)	6(13.6)	9(20.5)	

Discussion

The high prevalence of intestinal parasites in this study and the composition of the parasites isolated concur with the findings by Adeyeba and Akinlabi (2002) in Oyo State and Mbanugo and Abazie (2002) in Anambra State both in Nigeria; who attributed these infections to poor environmental sanitation, low standards of domestic hygiene and general ignorance

on the significance of these parasites by the population at risk. These parasites are commonly acquired from contaminated soil and water with varied symptoms of digestive and nutritional disturbances, blockages of the gut, abdominal pain, vomiting, restlessness, disturbed sleep, tissue perforation, anaemia, and with pregnancy leads to adverse effects on the mental and physical development of the foetus, premature birth and death (Adedeji and Ogunba, 1984; Effiome *et.al.,* 1999; Mbanugo and Onyebuchi, 2002; Stephenson *et. al.,* 2002).

The finding of significantly higher prevalence among younger women aged between 15 and 25 years conforms to the reports of Biu and Usman (2006) who indicated that intestinal parasitic infections are age-dependent and that patients show innate resistance based on sex, race, age, physiological and/ or nutritional status.

Although Mbanugo and Abazie (2002) reported from Anambra State that non pregnant women were more significantly infected by intestinal parasites, it contradicts the findings in this study that pregnant women were more infected than non pregnant ones, but this was not statistically significant.

However, this could be attributed to their eating habits during pregnancy, which usually as part of health education they are advised to eat fruits and fresh vegetables that probably could be contaminated (Umeche, 1991).

The findings in this study reflect the need for improved environmental and domestic hygiene with emphasis on health education particularly on personal hygiene and eating habits, which will enhance control efforts on common parasitic diseases in Nigerian women.

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