POSITIVE FECAL OCCULT BLOOD TEST IN CORRELATION WITH INTESTINAL PARASITIC INFECTIONS

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ABSTRACT

700 Stool samples were examined for intestinal parasitic infection and for fecal occult blood among those attending the outpatient department of Ibn-Sina hospital in Sirte-Libya. This work aims to determine the intestinal parasitic infections associated with positive fecal occult blood. Our results showed that 532 samples (76%) were detected positive for parasitic infections (P< 0.0001), *Entamoeba histolytica* was the commonest parasitic infection detected (36.3%). The positive FOB test was observed in 166 samples (23.7%) of the total examined samples, 140 samples (84.3%) of the positive FOB test samples were correlated with the intestinal parasitic infection (P<0.0001), 120 samples of them (72.3%) were correlated with *Entamoeba histolytica* infections (P<0.0001). The present study demonstrated that positive FOB test during routine analysis was correlated with the intestinal parasitic infections, especially with *E. histolytica* rather than any other causes.

KEY WORDS: Parasitic infection, Occult blood, Stool samples.

INTRODUCTION

Infections due to intestinal parasites caused by helminths and protozoa still constitute one of the major causes of public health problems in the world, particularly in developing countries[1,2]. The main intestinal parasites that infect man are Entamoeba histolytica, Balantidium coli, Giardia lamblia, Isospora belli, Cryptosporidium species, Taenia saginata, Taenia solium, Hymenolepsis nana, Dipyllidium caninum, Diphylobothrium latum, Fasciolapsis buski, Metagonimus yokogawai, Heterophyses spp, Ascaris lumbricoides, Trichuris trichiura, Entrobius vermicularis, Hook worms, Strongyloides stercoralis and Schistosoma mansoni[3].

Fecal occult blood (FOB) refers to a nonvisible blood in the stool[4,5]. Several parasitic intestinal infections are correlated with positive FOB including Trichuris trichiura, Hookworm, Schistosoma spp. And Entamoeba histolytica[6,7,8].

This work aims to determine the intestinal parasitic infections correlated with positive fecal occult blood among those attending the outpatient department of Ibn-Sina hospital in Sirte-Libya.

MATERIALS AND METHODS

1- Parasitologic Examination

A-Collection of stool samples:

Stool specimens were collected in a clean, wide mouthed containers with a tightly fitted lid and the time of collection was recorded on the container, which was properly labeled.

B-Direct fecal smear:

Each sample was processed and examined immediately after collection using direct fecal smears (Normal saline, Iodine, Eosin)[9]. Soon after direct smear, the samples were microscopically examined.

C-Centrifugal saline sedimentation technique:

The samples were concentrated as described by Baroody B. J. And Most, H.[10].

2- Fecal occult blood technique

A Commercial kit (guaiac-based test) for detection of occult blood in faeces (Sentinel CH. Milan – Italy) was used. Each kit contains 25 slides and 25 plastic tubes, which contain the reagent.

Procedure: The provided plastic stick was plunged in the stool specimen and removed (usually about 2-3 mg of stool sticks on the plastic stick), then the stick was dipped in the provided reagent in the tube and stirred to mix the attached stool with the reagent. 3-4 drops of the mixture were put on the provided occult blood slide and the result was read after 3 minutes. Appearance of two red lines on the slide indicates a positive test.

3- Statistical analysis

The results for positive samples were expressed as percentages, and statistical analysis was carried out by using Paired t test. A probability p-value of $\leq$ 0.05 was considered as significant whenever appropriate.

RESULTS

The total number of samples included in this study was 700 samples; 532 samples of them (76%) were detected positive for parasitic infections with macro examination and micro-examination (P<0.0001) (table 1).

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(Table 1) The results obtained by direct wet mount method and centrifugal sedimentation method.

	Direct wet mount method	Centrifugal sedimentation method	P value
+ samples	332 (47.4%)	532 (76%)	< 0.0001
- samples	368 (52.6%)	166 (24 %)	

The types of detected parasitic infections are shown in details in (table 2).

(Table 2) Details of parasitic infections obtained by the direct wet mount method and the centrifugal sedimentation method.

	Direct Wet mount method	Centrifugal Sedimentation Method
Total no. Of parasites	407	890
Entamoeba histolytica	199	323
Giardia lamblia	34	64
Entamoeba hartmanni	29	82
Endolimax nana	21	61
Entamoeba coli	6	42
Blastocystis hominis	105	263
Trichomonas hominis	13	52
Enterobius vermicularis egg.	0	3
Adult female: Enterobius vermicularis	4 cases by macroexamination	

Entamoeba histolytica was the commonest parasitic infection detected (36.3%), followed by *Blastocystis hominis* (29.5%).

The positive FOB test was observed in 166 samples (23.7%) of 700 examined samples (table 3 and table 4), 140 samples (84.3%) of the positive FOB test samples were correlated with the intestinal parasitic infection (P<0.0001).

(Table3) Fecal occult blood positivity in parasitic infected and non-infected samples.

	Negative Parasitic infection (n=168)	Positive Parasitic infection (n=532)	
Positive FOB	26 (15.47%)	140 (26.32%)	P-value<0.0001
Negative FOB	142 (84.53%)	392 (73.68%)	

FOB test was positive in 120 sample (72.3%) of Endameba histolytica infection (P<0.0001) and only in 8 samples (4.8%) of Giardia lambilia infections (table 4).

(Table 4) Positive fecal occult blood in relation to parasitic infections.

Total No. of positive FOB samples	No. of positive FOB in parasitic negative samples	No. of positive FOB in parasitic positive samples		
166 (23.7%)	26 (15.7%)	140 (84.3%)		
		E. histolytica	**G. lamblia**	**Others***
		120 (72.3%)	8 (4.8%)	12 (7.2%)

**Blastocystis hominis, Entamoeba coli, Entamoeba hartmanni and Trichomonas hominis.*

DISCUSSION

Intestinal parasitic infection was found in 532 specimens (76%) of the whole 700 samples examined (P<0.0001). The number of protozoal infections largely exceeds the number of helminthic infections. High rates of parasitic infections were also reported in a number of developing countries such as Brazil, Tanzania, Nigeria and Iraq[11-14]. Low rates of infection has been reported in the developed countries such as USA[15]. However, the most common intestinal parasite identified in present study was E. histolytica.

Even though the FOB test was developed to specifically screen for colon cancer[4,5], but indeed there are various causes of positive FOB including infection with some intestinal parasites[6, 8], In this study 166 (23.7%) stool samples showed positive FOB test. Of total positive FOB test 140, (84.3%) stool samples showed parasitic infection. Our results demonstrated that positive FOB test during routine analysis was correlated with the intestinal parasitic infection (P<0.0001).

In the present study several pathogenic and nonpathogenic intestinal protozoan parasites were detected and investigated for correlation to FOB positivity. There was a significant difference in FOB positivity between infected and non-infected samples (P<0.0001) (table 3).

Our results shown that E. histolytica was the most caused of positive FOB within the detected intestinal protozoan parasites (P<0.0001), this parasite is the most known as a caused of dysentery or blood loss[8]. A previous study reported four asymptomatic cases with positive FOB test and amebic colitis due to E. histolytica[16].

CONCLUSION

The present study demonstrated that positive FOB test during routine analysis was correlated with the intestinal parasitic infections, especially with *E. histolytica* rather than any other causes.

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