

Prevalence of intestinal parasite among primary school children in Benghazi Libya

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INTRODUCTION

Intestinal parasitic infection are among the most common infections in the world, being responsible for considerable morbidity and mortality (WHO , 1991).

Intestinal parasitic infections are highly prevalent in developing countries, mainly due to deficiency of sanitary facilities unsafe human waste disposal systems, in adequacy and lack of water supply and low socioeconomic status (Tesfamichael and kloos , 1988) . In general, the prevalence of parasitic diseases is an indication of environmental conditions (Beaver etal., 1984) . The study carried out by Dar and Freind. (1979) on the closed community , probably constitutes the first report on intestinal parasites in children within the city . Data on the prevalence of intestinal parasites in school children in Benghazi are scarce .

Two reports , one published by Dar *et al* (1979) and another by El-Boulaqi *et al* (1980) represent the only available information on parasitic infection among primary school children .

The other studies are unfortunately all hospital – based reports (EL-Buni and khan , 1998 ; Al-Tawaty *et al* , 1998, and Bugarara *et al* 1999).

The aim of this study is to study the prevalence of intestinal parasitic infection in a representative sample of school children in Benghazi city, Libya.

MATERIALS AND METHODS

Area of study

Benghazi is the second largest Libyan city occupying an area of approximately 240 km². Benghazi has a Mediterranean climate with moderate winter and hot summer.

The average monthly temperature during the winter months is in the range of 10-17^oc, which may reach 22-29^oc in the summer.

The average annual rainfall is usually not more than 250mm and the annual relative humidity is in the range of 25 -75 % .

Study population

The school children in this study were from some schools situated in different areas of Benghazi, city. However, the schools were selected on the basis of convenience. A total of 1882 children of both sex and age between 6 and 12 years old, were selected.

Lab. Examination

Stool specimens were collected in clean, numbered plastic containers with caps . Stool specimens were then examined by direct smear films with one or two drops of

physiologic saline solution on one slide and one or two drops of Lugol's iodine on the other slide these were examined under a microscope and after concentration by sedimentation flotation technique to identify trophozoites, cysts, eggs and larvae or adult worms of parasites.

Table (1) :
The prevalence of intestinal parasites among
school children by gender
(N.1882)

Gender	Examined No.	Positive No.	Prevalence per 100
Male	1322	543	41.01
Female	560	189	33.75
Total	1882	732	38.89

Table (2):
The distribution of intestinal parasites found
by age among school children in Benghazi.
N (1882)

Age in years	Students examined	Students positive No.	Rate per 100
6	265	113	42.64
7	285	114	40.00
8	292	109	37.33
9	297	113	38.05
10	386	170	44.04
11	357	113	31.65
Total	1882	732	38.89

Table (3):
Prevalence per 100 children examined of intestinal
Parasites in different age groups of children
No.1882

Type of Parasites	Male		Female		Total	
	No.	Prevalance	No.	Prevalance	No.	Prevalance
<i>Entamoeba coli</i>	124	65.9	38	22.2	162	8.61
<i>Entamoeba histolytica/ E.dispar</i>	117	63.2	44	23.4	161	8.60
<i>Iodamoeba. butschlii</i>	17	9.0	4	2.1	21	1.12
<i>Gairdia Lamblia</i>	118	63.0	38	20.2	156	0.83
<i>Enterobius. vermicularis</i>	14	7.4	8	4.5	22	1.12
Hookworms	6	3.2	3	1.6	9	0.50
<i>Ascaris. lumbricoïdes</i>	38	20.1	17	9.0	55	2.92
<i>Trichurius. trichura</i>	12	6.4	5	2.7	17	0.90
<i>Hymenolepis. nana</i>	97	51.5	32	17.0	129	6.90
Total	543	288.5	189	100.4	732	33.89

Results

The present study including 1882 stool samples of primary school children to determine the prevalence of intestinal parasites. The prevalence of positive cases of the intestinal parasites were found to be 38.89% among all, while 41.07% among male and 33.75% among female.

The present study included a total of 1882 school children between 6 – 11 years of age, the prevalence rate of intestinal parasitosis was 41.07% among male and 33.75% among female while 38.89% among both sexes. It seems there was no significant difference in the prevalence of the intestinal parasites found by age or gender (tables. 1 - 2).

Among 9 types of intestinal parasitosis *E.coli* , *E.histolytica*, *E.dispar*, and *G.lambliia* were the commonest protozoa and *H . nana* was the commonest helminth. as shown in (table.3).

Discussion

The overall prevalence seen in this study was 388.9. It was higher than previous prevalence studies reported for city school children. Dar *et al* (1979), reported that the prevalence of both helminth and protozoan parasites in school children found to be 276 per 1000.

In another study, a prevalence of 756 per 1000 was reported from five schools in Benghazi city (El- Boulaqi *et al* (1980). Similar and differing infection rates have been noted for school children from other parts of the world . A 21.1%, 27.6% and 95.5%-were estimated for Al- Baha region in Saudi Arabia (Al- Eissa *et al* (1995) , Gaza city (Yassin *et al* ,1999) and the Philippines (Lee *et al* 2000) respectively .

Nine intestinal parasites were detected in the present study, the study carried out by Dar *et al* (1979) found 10 species of intestinal parasites and El- Boulaqi *et al* (1980) detected 5 protozoan and 5 helminth parasites among the school children in Benghazi city, El- Buni and Khan (1998) reported 4 protozoan parasites and Bugharara *et al* (1999) found 4 protozoan intestinal parasites among children admitted in Al- Fateh children's hospital in Benghazi city. Almost a similar number of 8 protozoa and 7 helminth parasites were reported from a rural area in Tanzania (Gomez - Morale *et al* (1995) and 5 protozoa and 4 helminth parasites from Bendel state in Nigeria (Obiamiwe and Namorsi , 1991).

The absence of a difference in prevalence between age groups seen in this study has been previously observed for

school children from Benghazi city (Dar *et al* 1979) as well as from other parts of the world (El- Eissa *et al* 1995; Devera *et al* 1997 ; Rivero- Rodriguez *et al* 2000 and Young *et al* 2000)

This suggests the absence of immunity to infection and implies that children of all ages are susceptible to infection and are probably being infected continuously.

On the other hand the presence of a difference in infection between sex for the parasites as a whole may be a result of comparable susceptibility to infection , unequal exposure to contaminated conditions as well as the persistence of unhygienic attitudes very characteristic of children at this age.

This study concludes that similar study should be done from time to time to be able to carry out any intervention programs needed , and in particular health education programs for any group of school children , as will any parasitic infection prevalent in any time and place.

REFERENCE

1. AL- Tawaty, A.I., Khan, A. H., EL- Sharkasi, N.I. and EL- Buni, A.A. (1998). Screening of *Cryptosporidium* oocysts in clinically immunocompetent children. The fourth Jamahiriya Congress on Medical Sciences, Benghazi, 1 – 4 November 1998. p\p 242.
2. Beaver, P.C. Jung, R.C., Cupp, E.W. Clinical parasitology, 19th Edition, Lea and Febiger, Philadelphia, 1984.
3. Bugarara, S.I., Ali, M.Y., Khan, A. H., EL- Sharkasi, N.I. and EL- Refi, H.(1999). Incidence of *Cryptosporidium* in patients with diarrhea. *Rivista di Parasitologia*, XVI : 169 – 172.
4. Dar, F.K and Friend, J.E. (1979) parasitoses in a closed community – a pilot study. *Garyounis Medical Journal*. 2: 95 – 96.

5. Dar, F.K., EL- Khouly, S.I., EL- Boulaqi, H.A., Munir, R. and EL-Maghrebi, S. (1979). Intestinal parasites in Benghazi school children. *Garyounis Medical Journal*, 2: 2-7.
6. Devera, R.A., Punos, G.N., velasquez, V.J., Catanese, J.A. and Meneses, R.G. (1997). Prevalence of *Blastocystis hominis* in schoolchildren from Bolivar city, Venezuela. *Boletin Chileno de Parasitologia*. 52: 77-81.
7. EL- Boulaqi, H.A., Dar, F.K. and Medini, M.S. (1980). Prevalence intestinal parasites in primary school children in Benghazi city. *Annal of the Egyptian society of Parasitology*, 10: 77 - 82.
8. **EL- Buni, A.A. and khan, A.H. (1998). Intestinal protozoan infections in Benghazi. *Sebha Medical Journal*. 1 : 106 – 108.**
9. AL- Eissa, Y.A., Assuhaimi, S.A., Abdulla, A.M., AL- Husin, M.A., AL- Nasser, M.N. and Borno, M.K. (1995). *Journal of paediatrics*. 41(1) : 47 – 49.
10. Gomea – Morales, M.A., Atzori, C., Ludovisi, A., Rossi, P., Scaglia, M. and Pozio, E. (1995). Opportunistic and non-opportunistic parasites in HIV positive and negative patients with diarrhea in Tanzania. *Tropical Medicine and Parasitology*. 46(2) : 109 – 114.
11. Lee, K. J., Ahn, Y.K. and Yong, T.S. (2000). A small – scale survey of intestinal parasites infections among children and adolescents in Legaspi city, Philippines. *Korean of parasitology*, 38 :183 – 185.
12. Obiamiwe, B.A. and Nmorsi, P. (1991). Human gastrointestinal parasites in Bendel state, Nigeria. *Angew parasitology*. 32 (3) : 177 – 183.
13. Rivero – Redriguez, Z., Chourio – Lozano, G., Diaz, L., Cheng, R. and Rucson, G (2000). Intestinal parasites in school children at a

public institution in Maracaibo municipality, Venezuela. Investigacion clinica. 41 : 37 – 57.

14. Tesfamichael, T. and Kloos, H. (1988). Intestinal parasitism. In. Zein. AZ. And Kloos H. (Eds). The Ecology of Health and Disease in Ethiopia. Addis Ababa : Ministry of Health, 214.
15. World Health organization Basic Laboratory Methods in Medical Parasitology, Geneva: WHO: 25 – 26. Nicef. The prescriber. May 1993:1 – 8.
16. Yassin, M.M., Shubair, M.F., AL- Hindi, A.I. and Jadallah, S.Y. (1999). Prevalence of intestinal parasites among school children in Gaza city, Gaza strip. Journal of the Egyptian society parasitology, 29 : 365 – 373.
17. Young, T. S., Sim, S., Lee, J., Ohrr, H., Kim, M.H. and kim, H. (2000). A small-scale survey on the status of intestinal parasite infections in rural villages in Nepal. Korean Journal of parasitology. 38 : 275 – 277.

Abstract / Summary

The present study on the prevalence of infectinol parasites infection was conducted among school children in Benghazi – Libya. The overall infection rate in 1882 children determined by direct smear films and sedimentation technique was 38.89 % , yielded different species of parasites. Entamaeba coli, with a prevalence of 8.61 % followed by Entamaeba histolytica / E.dispar (8.60 %), Hymenolepis nana (6.90 %), Ascaris Lumbricoides (2.92 %). Iodamaeba butchlii and Enterobius varmicularis (1.12 %), Trichuris trichuro (0.50 %). Male and Female had the infection rates of 41.01 % and 33.5 % respectively. Children in the age group 10 years old were the most affected, followed by the 5 – 7 year old age group.

المخلص

الهدف من هذه الدراسة هو تحري انتشار الطفيليات المعوية في اطفال بعض المدارس الابتدائية في مدينة بنغازي ، تم فحص 1882 عينة من البراز وكانت نسبة الانتشار 38.89% و اوضحت الدراسة وجود 9 طفيليات معوية . وقد شكلت المتحولة الولونية 8.61% ، المتحولة الحالة للنسيج (8.60%) ، الشريطية القزمية (6.90%) ، دودة الاسكارس (2.92%) ، كل من المتحولة اليودية و الدودة دبوسية (1.12%) ، الدودة السوطية (0.90%) ، الجيارديا المبيلية (83%) و الديدان الخطافية (0.50%) ، وكان معدل الانتشار في الذكور (41.01%) و الاناث (33.5%) . والفئة العمرية 10 سنوات كانت الاكثر اصابة تليها الفئة العمرية 6-7 سنوات .