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CORRELATION OF HAEMOGLOBIN LEVEL WITH INTESTINAL PARASITES IN SCHOOL CHILDREN OF PESHAWAR UNIVERSITY

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SUMMARY:

Parasitic infection and Hb level of 230 school children at Peshawar University were observed during October, 1992 to May, 1993.

The overall infection rate was 29.1% of which 6% showed mixed infection. Among positive eases Ascaris lumbricoids was the commonest (38.8%), followed by Hymenolepis nana (26.9%). E. Coli was present in 10.4% cases, G. Lambliain 9% cases and E. Histolytica in 6% cases. However, the prevalence rale each for T. Saginate and E. Vermiculeris was 3%, while T. Trichiure and Hookworm each was found in 1.5% eases.

The mean haemoglobin in healthy subject was 13.6 g/dl, while in infected subjects it was 11.4 g/dl. the difference was statistically significant ($P<0.05$).

INTRODUCTION:

Worm infestation is a common health problem in the world. Its rate varies from country to country and even among different parts of the same country. Several reports regarding the incidence of intestinal parasites arc available. In Bangladesh slum, over 80% of the population have one or more parasites.[1] In some parts of India Ascaris infestation has been found 80-90%[2] In Yemen 53% of the stool specimens were positive for intestinal parasites.[3] In Pakistan also various surveys have been conducted in different areas.[3,5] This problem in our community is more common in children as they are particularly exposed to soil borne infection. In addition, lack of basic education, improper toilet facilities, poor facilities for excreta disposal and unhygienic living conditions also play role in the prevalence of worm infestation. The child suffering from parasitic infection has extra drain on their nutrition. Beside malnutrition other diseases reported in them arc recurrent diarrhea, vomiting, respiratory infections, intestinal obstruction and malabsorption. Continuous malnutrition and malabsorption in school children effect the health, charm and wellbeing, resulting in poor scholastic performance. Haemoglobin is one of the most important parameter responsible for charm and health which decreases because of blood loss from mucosal laceration due to worms and feeding activities of different worms.[9] The present study was therefore, designed to determine the pattern of parasites and its effect on haemoglobin level in school children of Peshawar University.

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MATERIALS AND METHODS:

A total of 230 school children (male-106, fcmalc-124) from three different schools of Peshawar University were randomly selected for the study (Table- 1):

Table -1: DISTRIBUTION OF SUBJECTS.

S. No.	Name of School.	Nos.
1.	Islamia Collegiate School	110
2.	University Model School	46
3.	University Public School	74
	Total =	230

The age range was 5-12 years. Information regarding age, sex, family members and income, size and condition of the house, toilet facilities, whether day scholar or border and source of drinking water were recorded on a proforma.

Fresh morning stool samples were collected in plastic cups with light lids and were examined in the laboratory within one hour. The specimens were first examined using normal saline and then using "D" A nation's iodine as described by the Willis.[10] Negative results were confirmed by the concentration method and by analyzing the three consecutive days samples. Two ml blood samples were also collected in clean bottles containing EDTA as anticoagulant and haemoglobin was estimated by cyanmethaemoglobin method.[11]

RESULTS

The results of 230 stool specimens are given in tables: 2-5. The number of positive cases in the male group was 29 (27.4%) while it was 38 (30.6%) in the female group. The highest frequency was observed for Ascaris lumbricoid i.e. 38.8% among infected cases. There was a slight difference in infection rate between day scholars coming from adjoining villages had a lumbricoids prevalent. Students drinking well water were more infected as compared to hand pump and lap water. Similarly, children of large size families were found more positive. Among infected subjects double infestation was noted in three cases (4.5%) and triple only in a single case (1.5%).

The mean haemoglobin of healthy and infected subjects was 13.6g/dl respectively, showing statistically significant difference ($p<0.05$).

TABLE – 2: PERCENT OF POSITIVE CASES

Sex	Total No.	Positive Cases	Percentage
Male	106	29	27.4
Female	124	38	30.6
Total	230	67	29.1

TABLE - 3: TYPES OF INTESTINAL PARASITES AMONG POSITIVE CASES.

Parasite	No.	Percentage
Entamoeba Histolytica	4	6.0
Entamoeba Coli	7	10.4
Giardia Lamblia	6	9.0
Ascaris Lumbricoides	26	38.8
Hymenolepis Nana	18	26.9
Taenia Saginata	?	3.0
Entrobious Vermiculeris	2	3.0
Trichuris Trichiura	1	1.5
Hookworm	1	1.5

Table - 4: MIXED INFECTION IN SCHOOL CHILDREN

Parasite	**No**
E. Histolytica with G. Lamblia	1
E. Coli with A. Lumbricoid	1
E. Coli with H. Nana	1
E Coli with E. Histolytica and H. Nana	1

Table - 5: RELATION OE TOILET HABITS WITH WORM INFECTION

Type of Toilet	No. of Positive Cases	Percentage
Flush Toilet	16	23.9
Open Latrine	23	34.3
Open Field	28	41.5

DISCUSSION:

The type and frequency of various parasites vary from region to region especially in pediatric age

group. In the present study we found comparatively low positive cases (29.1%). An early research orders reported a prevalence of 43.9% in school children in Peshawar[5] and 76.6% in children of district Dir.[12] However, similar incidence (30%) was found in Islamabad.'[1] The reason may be dial both the areas arc comparatively clean and people there are educated and aware of health hazards.

Ascaris lumbricoids was dominant in our results (38.8%). Similar incidence was reported earlier.[6,7] However, in a study in Saudi Arabia only 1% Ascaris lumbricoids was found.[13] The low percent of this parasite may be due to lack of surface water, use of flush latrine and dry weather.

Hymenolepis nana was second prevalent in our study (26.8%). Similar prevalence (26%) was found in children of Forward High School Peshawar.[5] Giardia lamblia was observed in 6 cases. The incidence is lower than early study.[5] This parasite is often found in facally contaminated water. This indicates that water of university is not more contaminated as compared to other places. Recently, zoonotic transmission has been suggested for giardiasis[14]. It is interesting that only a single ease of hookworm was detected. A research worker reported 3.6% eases from Dir.[12] The reason for low incidence may be the educated environment and children there do not walk barefooted.

The mean haemoglobin in infected subjects was 11.4 g/dl which is below the normal range. This means that parasites receive nourishment from infected subjects. Some parasites suck blood from the host. Malnutrition, large size of family and malabsorption are also other factors affecting Hb level indirectly.

REFERENCES

1. Khan, VI.U., Shahidullah, M., Barua, D.K. and Begum, T Efficacy of periodic deworming in an urban slum population for parasite control. Ind. J. Med. Res. 1986; 83: 82-8
2. Elkins, D.B., Haswell, H.M. and Anderson, R.M. The epidemiology and control of intestinal helminths in Pulicat lake region of Southern India. Trans. R. Soc. Prop. Med. 11yg. 1986; 80(5): 774-92.
3. Farag, ILF. Intestinal parasitosis in the population of Yemen Arab Republic. Trop. Geoor. Med. 1985; 37(a): 29-31.
4. Pal, F.A. and Tana, S.I. Incidence of intestinal helminths parasites of man in the twin city of Rawalpindi/Islamabad. J.P.M.A. 1973; 33(2): 33-38.
5. Siddiqui, M.N., Bano., L. Observations of parasitic infections in school children of Peshawar. Pak. J. of Zoology 1979; 11(1): 109-113.
6. Ansari, M.A.R., Naru, N.A. and Chaudhary, M.A. Intestinal parasites of Rang Mahal Area of Lahore city. Pak. J. Health 1968; 18: 33-37.
7. Fatima, M.B., Ali Khan and Nazar, A. A. Survey of intestinal protozoan and helminth parasites in Karachi. J. Med. Res. 1982; 21(2): 54-56.
8. Shah, S.H., Khaliq, M.A. and Subhani, F. Helminthic infestation in Hazara Division. J.P.M.A. 1986; 36:11-13
9. Victor, C., Jones, R. and Waldo, F. Nelson Text Book of pediatric. 10th Edition W.B. Saunders Company Philadelphia, London, Toronto. 1975; 757.
10. Willis. Manual of basic techniques for a health laboratory. Geneva: WHO, 1980; 163.
11. Van Kempen, E.I., Zijlstre, W.G. A modified method of Haemoglobin estimation in blood. Clin. Chem. Acta. 1961; 6:538-40.
12. Sher Bahadar Khan, Intestinal pathogenic parasitosis in residents of Dir. Rawal Medical Journal. 1976; 4(1): 21-24.
13. Moslim, U.K., Serag, E.D. and Shashi, A. Prevalence of intestinal parasites among patients in the Abha region. Annuals of Saudi Medicine 1989; 9(5): 471-74.
14. Bemrick, W.J. and Erlandsen, S.L., Giardiosis: Is it really a zoonosis, parasital today 1988; 4(3): 69-71.