Pak Armed Forces Med J 2006; 56(4): 342-346

FREQUENCY AND PATTERN OF INTESTINAL PARASITIC INFESTATION IN UPPER NEELUM VALLEY

Tariq Masood Malik, Zahid Farooq Baig

26 (I) MST, C/O Pak Army Code-32

ABSTRACT

Background: The public health importance of intestinal parasitic infestations can not be denied because of their high prevalence and global distribution. It is an established fact that intestinal parasitic infestations can lead to a number of adverse affects like anaemia, stunted physical and mental growth, abdominal colic, cholestasis, cholecystitis and pancreatitis.

Objective: To assess the frequency and pattern of intestinal parasitic infestation in upper Neelum Valley (Azad Kashmir).

Place and Duration: The study was conducted at Military Field Hospital Neelum Valley Azad Kashmir from July 2004 to Jun 2006.

Materials and Methods: The patients presenting with various abdominal complaints were included in the study. The stool samples of a total of 638 patients were examined by Direct Microscopy as well as by Formal Ether Concentration Method wherever necessary.

Results: One hundred and fifteen 155 (18.02%) non duplicate stool samples were positive for intestinal parasites. There was no statistically significant difference in incidence with regard to age or gender ($P > 0.05$). Ascaris lumbricoides was the most common parasite 58 (50.43%) cases followed by Tinea saginata 31 (26.96%) cases and Giardia lamblia 11 (9.57%) cases. Hymenolepis nana 6 (5.22%) cases, Trichuris trichura 5 (4.35%) cases, Entrobius vermicularis 3 (2.60%) and Entamoeba histolytica 1 (0.87%) cases were less frequent. No case of Hookworm was seen.

Conclusion: The percentage of intestinal parasites (18.03%) is quite high in upper Neelum Valley. The helminthes are more common than protozoa. Ascaris lumbricoides is the most common parasite followed by Tinea saginata and others.

Recommendations: Appropriate steps be taken at District level for provision of safe drinking water schemes and improvement in local sanitary conditions. The Health and Education departments should help by inculcating awareness among the general public about importance of safe drinking water, environmental and personnel hygiene alongwith periodic de-worming programmes. These measures would help in reducing the occurrence of intestinal parasites and associated adverse affects.

Keywords: Intestinal parasitic infestation, Neelum valley

INTRODUCTION

According to the estimates of The World Health Organization (WHO) over one billion of the world's population is chronically infested with soil transmitted helminthes [1]. Intestinal parasitic infestations are most common among children [2]. These parasitic infestations are acquired by ingestion, inhalation or penetration of the skin by infective forms and their high incidence is closely co-related to poverty, poor environmental hygiene and impoverished

Correspondence: Lt Col Tariq Masood Malik, Classified Pathologist, 26(I) MST, C/O Pak Army Code-32.

health services [3,4]. The intestinal parasitic infestations are a serious medical and health problem in developing countries [5]. Being a developing country intestinal parasitic infestation is one of the major health problems in Pakistan, specially in the rural areas. It has not been given due importance since intestinal parasitic infestation is seldom the direct cause of death. Epidemiological studies on the intestinal parasitic infestation in different parts of the country are of great importance as they reflect on the personal hygiene, environmental and sanitary conditions of the area .These studies will be a source of data that is essential to formulate strategies for the effective control measures.

Keeping in view above mentioned facts a study was conducted on intestinal parasites in Upper Neelum Valley, Azad Kashmir (i.e Dudhnial, Sharda, Kel, Nekrun and surrounding areas). The Upper Neelum Valley is situated to the North East of Muzaffarabad at about a distance of 150 Kilometers. The general terrain of the area is hilly with occasional plateaus and majority of the people are residing at a height of 7000 to 10000 feet above the sea level. The area almost completely lacks proper drainage and sanitary systems. Similarly there are no water filtration plants or any other water purification system. The people mostly consume water from brooks and springs. The overall climate of this area is cold with freezing temperatures in winters (-10^0 C to – 15 ^{0} C). The total population of the area is about 70000. Most of the people are illiterate belonging to low to very low socio economic class and lack awareness about importance of sanitation, personal and environmental hygiene with respect to health.

The purpose of this study was to assess the frequency and pattern of intestinal parasitic infestation in Upper Neelum Valley.

PATIENTS AND METHODS

This study was conducted at a Military field medical facility Kel, Azad Kashmir from Jul 2004 to Jun 2006. The patients of all age groups and both sexes from Kel and surrounding areas of Upper Neelum Valley with complaints of abdominal pain / discomfort, nausea, vomiting, dyspepsia, indigestion and diarrhea were included in the study. The patients were provided clean, dry, properly labeled plastic containers for collection of stool samples. The stool samples were examined within six hours of collection macroscopically for worms and their segments and microscopically for ova, larvae, cysts and vegetative forms. Direct microscopy of the saline preparation of stool was the technique employed in all the cases. However, in those cases which were negative by saline preparation method but had strong clinical suspicion of intestinal parasitism, the Formal Ether Concentration Technique was used [6].

Data had been entered and analyzed using SPSS ver-11.0. Descriptive statistics i.e percentages were used to describe the data.

RESULTS

A total of 638 stool samples were examined out of which 115 (18.03%) revealed presence of parasites. There was no statistically significant difference in the percentages of intestinal parasites according to the age or gender of the patients, ($P > 0.05$) (table-1).

Overall Ascaris lumbricoides was the most common parasite, being present in 58 (50.43%) cases, followed by Tinea saginata in 31 (26.96%), cases Giardia lamblia in 11 (9.57%) cases and Hymenolepis nana in 6 (5.22%) cases (table-2).

Among the intestinal protozoa Giardia lamblia was the most common parasite being present in 11 (91.67 %) cases while Entamoeba histolytica was seen in only one case (fig. 1).

Among the Helminthes, Ascaris lumbricoides was at the top followed by Tinea saginata, Hymenolepis nana, Trichuris trichura and Entrobius vermicularis (fig. 2). No case of Hookworm was seen.

DISCUSSION

The percentage of intestinal parasites in this study was 18.03%. Overall intestinal helminthes were more common than protozoa. Ascaris lumbricoides was the most common parasite. The results are similar to studies from other parts of Azad Kashmir and Pakistan including Bagh [7], Karachi [8], Lahore [9], Sargodha [10], Rawalpindi [11] and Peshawar [12]. Tinea saginata was the second most common intestinal parasite in this study. This finding is different from other studies mentioned above but this higher incidence of Tinea saginata could be due to difference in local food habits and cooking techniques. Moreover, limited grazing fields for cattle because of hilly terrain and the same fields being used by the local population for defecation coupled with impure water and poor personal hygiene could be other contributory factors. The percentage of Hymenolepis nana, Trichuris trichiura and Entrobius vermicularis was relatively low. The results being similar to the study from Rawalpindi, Islamabad [13]. Although high incidence of Hookworm has been reported in many other studies from Pakistan [8,10, 11,14] but no case of Hookworm was detected in our study. The result being similar to other studies from Bagh, Azad Kashmir [7] and Abbottabad Pakistan [15]. This may be due to overall cold climate of the region and freezing temperatures in winters, which kill infective larvae of the Hookworm [16].

Among protozoa, Giardia lamblia was the most common intestinal parasite while the percentage of Entamoeba histolytica was very low. The overall incidence of protozoal infection was less than that of Helminthes. The result being similar to a study from Abbottabad [15] and a study from Philippines [17].

The percentage (18.03%) of intestinal parasites is quite high keeping in view the cold climate of this region. The main contributory factors for this high percentage are poor sanitation, open field defecation, poor personal hygiene, impure water, poverty and lack of education.

Intestinal parasitic infestation is one of the causes of anaemia alongwith stunted physical and mental growth [18,19]. Apart

Table-1: Age and sex wise distribution of positive cases (n = 115)

Category	Total Tested	Positive	%age
Age less than 15 yrs	293	64	**21.84**
Age more than 15 yrs	345	51	**14.78**
Male	386	70	**18.13**
Female	252	45	**17.86**

Table-2: Distribution pattern of different intestinal parasites

Parasite	No of Positive Cases	%age
Ascaris lumbricoides	58	50.43
Tinea saginata	31	26.96
Giardia lamblia	11	9.57
Hymenolepis nana	6	5.22
Trichuris trichura	5	4.35
Entrobius vermicularis	3	2.61
Entamoeba histolytica	1	0.87
Hookworm	Nil	0
Total	**115**	**100**

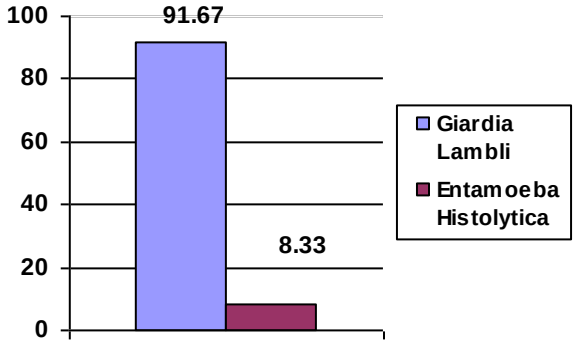

Fig. 1: Distribution of intestinal protozoa (n=12)

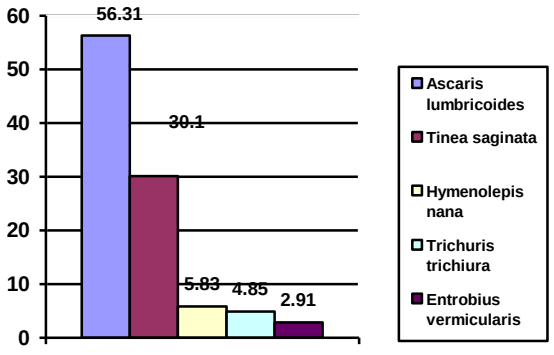

Fig. 2: Distribution of intestinal helminthes (n=103)

Fig. 3: Round worms recovered from a case of acute intestinal obstruction

from the detrimental effect on physical and mental growth, intestinal parasites can also lead to adverse effects like abdominal pain, biliary disease, colic, pyogenic cholangitis, cholecystitis, cholestasis [20], diverticulitis [21], and pancreatitis [22,23]. The most frequent adverse effects seen in parasite infested cases in our study were abdominal discomfort, diarrhea, colic and sub-acute intestinal obstruction in few cases. There was one case of acute intestinal obstruction in our study which on laparotomy revealed a massive load of Ascaris lumbricoides (fig. 3).

CONCLUSION

The percentage of intestinal parasitic infestation (18.03%) is quite high in upper Neelum Valley. The pattern revealed Ascaris lumbricoides as the most common parasite followed by Tinea saginata and others.

Intestinal parasitic infestation is a major health problem in Upper Neelum Valley, which is mainly attributable to poor personal hygiene, poor sanitation, consumption of impure water, poverty and low literacy rate, There is a dire need to address this problem at multiple levels as an issue of public health priority.

RECOMMENDATIONS

It is suggested that appropriate steps be taken at District level for provision of safe drinking water schemes and improvement in local sanitary conditions. The Education and Health departments should help by inculcating awareness among the general public about importance of safe drinking water, personal and environmental hygiene alongwith periodic deworming programmes. Further studies in different areas would be helpful in assessment of the magnitude of problem and planning effective control measures.

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