ORIGINAL ARTICLE

Pervasiveness of intestinal protozoan and worm incursion in IDP's (North Waziristan agency, KPK-Pakistan) children of 6-16 years

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Abstract

Objective: To evaluate the prevalence of intestinal protozoan and worm infestation in children of families having migrated due to military operation.

Methods: The cross-sectional, descriptive study was conducted in Cantonment Military Hospital, Bannu, from August 4 to October 24, 2014, and comprised children of either gender aged 6-16 years belonging to families of internally displaced persons belonging to Miraliand Miranshah in North Waziristan Agency. Stool specimens were collected and examined by direct light microscopy for the assessment of intestinal protozoan and worm infestation.

Results: Of the 150 children examined, 52(34.66%) didn't show any cyst/ova in their stool examination and were marked negative, whereas 98(65.33%) tested positive for numerous intestinal parasites that included Ascaris Lumbricoides 27(18%), Hymenolepis nana 22(15%), Pin worm 18(12%), Taenia saginata 14(9%), Entamoeba histolytica 9(6%), Giardia Lamblia 5(3%) and Ankylostomaduodenal 3(2%).

Conclusion: Poor hygiene, outdoor open field defecation, and unclean standing water source are risk factors for high prevalence of intestinal worm infestation.

Keywords: Intestinal worms, Incursion, IDPs. (JPMA 65: 943; 2015)

Introduction

Developing countries are a victim of childhood worm infestation or incursion and this severe problem needs proper management.[1] In 2010, the annual budget which spent on health was just 3.76%.[2] Worldwide public health infection threats are reported continuously with research advancements. More or less two billion people in underdeveloped nations are affected by intestinal worms.[3] The age group of 5-15 years is the time period when intestinal helminthic infections tend to be high and this is reported to be most common among the children of that particular age group.[4] The reason behind the high prevalence of these infestations is closely associated with poverty, poor environmental sanitation and poor health services.[5] Efforts to control parasitic infections in developing countries typically focus on periodic anthelminthic treatments targeted at specific risk groups, like school children. In developing countries, anthelminthic treatments are given in school-going children. Yet, re-infection in endemic areas is still common.[6]

The incidence of intestinal parasites is more in displaced persons due to poor sanitation, primitive standard of living and personal habits of cleanliness. Intestinal worms which are known to be a potential health hazard and could be found in such areas are Roundworm (Ascarislumbricoides); Whipworm (Trichuristrichuria); Pinworm (Enterobiusvermicularis); Tapeworm (Taeniasaginata, Taeniasolium); Threadworm (Strongyloidesstercoralis); and Hymenolepsis nana.[7-9]

Worm and protozoan infections constitute 12% of the total disease burden in children of age 5-10. Worm and protozoan infiltration is the principal reason of iron deficiency anaemia; whipworm influx causes growth retardation and anaemia in children while hefty influx with both roundworm and whipworm causes protein energy malnutrition. It is of explicit concern that these incursions have sinister restriction on intellectual and learning skills of the children. In children, worm infestation results in intense modifications in mental, intellectual and physical growth. The condition is most common among the lower social groups and also in children whose parents are mostly in contact with contaminated soil while working outdoors.[10] This exercise boosts the permeation of the infectious larvae extant in the soil. Infection may also be caused by swallowing infective eggs in the case of A. lumbricoides, Trichuristrichuria or by infective larva penetrating the skin in the case of hookworm and Strongyloides stercoralis.[11] Helminthic infestation leads to nutritional lack and impaired physical developments which will have negative consequences on mental function and learning ability. The present study was planned to investigate the prevalence of

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intestinal protozoa and worm infestation in children of internally displaced persons (IDPs).

Subjects and Methods

The cross-sectional study was conducted in the pathology laboratory of Cantonment Military Hospital, Bannu, Pakistan, from August 4 to October 24, 2014, and comprised children of either gender aged 6-16 years belonging to families of IDPs from Mirali and Miranshah areas in North Waziristan Agency.

Stool sample from each child was received in pre-weighed container having formaline. Parents were asked and requested to a mass early-morning stool specimens in the container. The collection team coached parents/caretakers on how to collect enough stool (approximately 8-12gms). These samples were collected and transported to the lab for microscopic examination. They were initially examined by an expert technician and then verified by a pathologist. The method used for examination was simple light microscopy in which samples were examined under direct light microscope using normal saline, Lugols iodine.

Results

Of the 150 children in the study, 90(60%) had been enrolled in schools in their home areas, but at the time of sample collection, they had not been re-admitted in Bannu schools. Overall, 52(34.66%) children were marked negative due to having no ova in their stool samples, while 98(65.33%) were marked positive for numerous intestinal parasites (Figure-1).

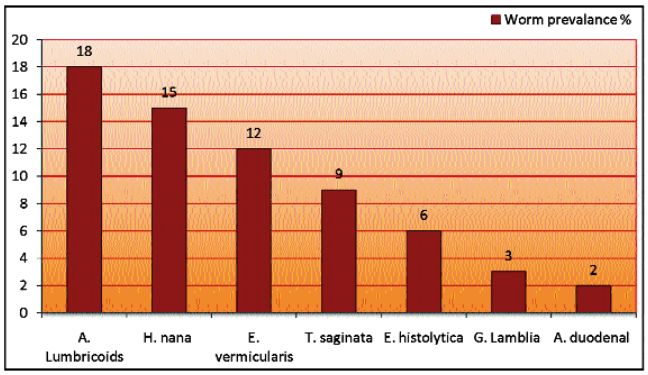

Figure-2: Percentage age incidence of various worms.

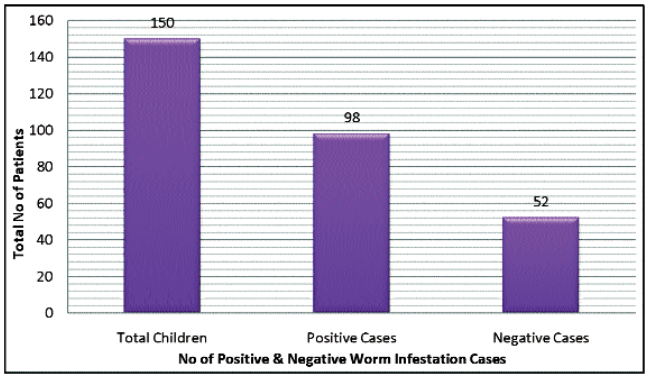

Figure-1: Number of positive and negative worm cases.

The infestations included A. Lumbricoides 27(18%), H. Nana 22(15%), Pinworm 18(12%), T. Saginata 14(9%), E. Histolytica 9(6%), G. Lamblia 5(3%) and A. Duodenal 3(2%) (Figure-2).

Discussion

This study was planned to assess the prevalence of protozoan and worm incursion in IDP children between 6 and 16 years of age. The children were victims of intestinal worms. Our results confirm the outcome of some other surveys carried out formerly in other parts of Pakistan which, as discussed below, also showed an elevated rate of worm influxes in our community generally and in children particularly. The infestation ratio of 65.3% in our study is higher than that the 54% reported in children of district Bannu.

Roundworm i.e. A. Lumbercoides was the most common species found during this investigation. The percentage occurrence of A. Lumbercoides was 18%, Pinworm 12% and H. Nana 15%. The findings are consistent with investigations conducted in different regions of the world as well as studies carried out in various Pakistani districts reporting worm infestations ranging from 21% to 91%.[12]

A World Health Organisation (WHO) report guesstimates that infections caused by A. Lumbricoides, Trichuris trichiura, Ancylostoma Duodenale and Necator Americanus affect approximately 250 million, 46 million and 151 million people respectively.[13] About half the inhabitants in south India[14] and 50% of school-attending children of the tribal areas of central India[15] are victims of A. Lumbricoides, Trichuris trichuria and/or Ancylostoma Duodenale. A Nigerian study showed 49.7% intestinal worms with an elevated ratio of 64.4% for A. Lumbricoides, Hookworms 10.9% and Tirchuris trichuria 1.1% cases. No of children with polyparasitism was 41(23.6%), 33 of them were positive both for A. Lumbricoides and Hookworms.[16]

In India, different studies conducted in various parts of the country have displayed results for the prevalence of intestinal parasites up to 30-50%.[17] Worm incursion was reported for different countries of the world: 31.8% in Turkey, 47.2% in Afghanistan, 19.3% in Iran and 44% in Sudan.[18,19] Some Pakistani studies have shown prevalence rates of 77% amongst teenagers[20] though an

Ethiopian investigation[21] revealed a much lower incidence. A comparatively great prevalence or worm infestations in these developing countries is due to meagre socio-economic conditions like absence of adequate housing, lower levels of education and awareness, poor healthiness facilities, inadequate hygiene and absence of clean drinking water.[22]

In the town area of Karachi[23,24] the incidence of intestinal parasitic infections was estimated to be 52.8%. Similarly, 81% children from outskirts of Abbottabad were reported to have intestinal worm infestation and majority of them (48% of positive cases) had A. Lumbricoides.[25]

Our study showed 65.33% of worm infestation which is higher than all the aforesaid studies.[26] A. Lumbricoides infestation has become an important point of attention in hepatopancreato-biliary diseases in affected areas and requires prompt acknowledgment and treatment to prevent complications. We endorse WHO recommendations to the effect that, 'in areas where prevalence of mild to moderate underweight children is greater than 25% and where parasites are known to be widespread, high priority should be given to deworming programme, data on prevalence of worms and trials of anthelmintic drugs are vital'.[27]

Conclusion

As the percentage of the worms is high in children of IDPs, parents need to be encouraged to consult physicians for giving their children proper dosage of anthelmintic drugs. Moreover, proper hand-washing after defecation, availability of clean drinking water and good environmental hygiene are also required.

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