ORIGINAL ARTICLE

FREQUENCY OF PARASITIC INFESTATION IN FAECAL SPECIMENS

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Background: Parasitic infestation is very common in developing countries. Major factors of worm infestation are poor socio-economic status, large family size, low educational level, and poor hygiene and sanitation. These parasites lead to nutritional deficiencies and various diseases. A few studies have been carried out in Pakistan and this study tries to find out the frequency of parasitic infestation in our setup. **Methods**: A cross sectional study was carried out from December 2011 to February 2012 in Pakistan Aeronautical Complex (PAC) Hospital Kamra. Patients were asked to pass stool specimen in a universal container provided to them from the laboratory. Stool specimens were examined within half an hour by direct light microscopy of faecal smears in normal saline. The laboratory diagnosis was based on the demonstration of ova/cysts or trophozoites. Data were analysed by SPSS-10 and frequency of various parameters was determined. **Results**: A total of 543 faecal specimens were tested. Specimens found positive for ova/cysts were 295 (54%). *Ascaris lumbricoides* was the most frequent parasitic infestation in all faecal specimens followed by *Taenia saginata*. Thirty percent of food handlers were harbouring different parasitic infections. Diarrhoea/dysentery, medical examination of food handlers and for secondment abroad was the most frequent indication for faecal examination. **Conclusion:** High frequency of parasitic infestation in our set up especially of Taenia species requires measures to improve hygiene, water and sanitation. Meat and its products should be obtained from medically fit animals and meat cooked thoroughly before being consumed.

Keywords: Anaemia, *Ascaris lumbricoides*, helminths, intestinal parasites, *Taenia saginata*

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INTRODUCTION

Parasitic infestation is a major health problem globally with intestinal parasites most common in developing countries, in both rural and urban poor communities.[1–3] More than one billion people are infected with soil transmitted helminths and many more live in high risk areas. Humans are infected by either ingesting eggs or penetration of the skin by infective larvae in the soil.[4] Due to the intimate connection of poverty the highest prevalence of neglected tropical diseases is observed in remote rural and deprived urban settings in the developing world.[5–7]

There is a high prevalence of such diseases in India, China, Pakistan, Iran and Syria. Indeed, 11 nuclear weapon states together account for almost one half of global disease burden of all such neglected diseases.[8] Poor hygienic and sanitation conditions and scarcity of drinking water are common in our country.[9] In spite of the burden of parasitic infestation in our country a few studies have been carried. The present study was therefore taken up to find out the frequency of parasitic infestation in our setup.

MATERIAL AND METHODS

This cross-sectional study was carried out from December 2011 to February 2012 PAC Hospital Kamra Pakistan. Faecal specimens advised to detect ova/cyst were included in the study including both indoor and outdoor patients. Clinical details mentioned in stool request form were noted to record indications for the test. These included mostly diarrhoea and dysentery. A few patients had abdominal pain or occult blood in their stools. Most of tests were done for medical fitness of food handlers and fitness abroad. Patients were asked to pass stool specimen in a universal container provided to them from laboratory of the PAC Hospital. Stool specimens were examined within half an hour by direct light microscopy of faecal smears in normal saline. The laboratory diagnosis of smear for parasite infestation was based on demonstration of ova, cysts or trophozoites. Data were analysed using SPSS-10.

RESULTS

A total of 543 faecal specimens were tested. A total of 543 faecal specimens were tested. Specimens found positive for ova/cysts were 295 (54%). Indications for faecal examination are given in Table-1. *Ascaris lumbricoides* was the most frequent parasitic infestation followed by *Taenia saginata* (Table-2). Thirty percent of food handlers were harbouring different parasitic infections.

Table-1: Indications for faecal examination

Indication	Number	Percentage
Diarrhoea/Dysentery	130	24%
Anaemia	87	16%
Abdominal Pain	33	6%
Occult Blood	22	4%
Med Exam for Courses Abroad	81	15%
Food handlers	190	35%
Total	543	100

Table-2: Frequency of parasites ova/cysts/ trophozoite isolated

Organism	No. Positive	Percentage
Ascaris lumbricoides	168	56.94
Taenia species	69	23.39
Ankylostoma doudenale	20	6.77
Enterobius vermicularis	12	4.07
Giardia lamblia	9	3.06
Hymenolepis nana	4	1.36
Trichuris trichura	4	1.36
Entameoba histolytica	4	1.36
Others	5	1.69

DISCUSSION

Worm infestation is not confined to certain geographical areas of the world but it is an emerging problem worldwide.[10] This is even greater health hazard in developing countries.[11] Ascariasis is a helminth infection of global distribution with over 1.4 billion persons affected worldwide.[12] In India alone there are 140 million people infested with it whereas there are 86 million people harbouring this parasite in China. In Pakistan, the number of people infected is 21 million.[8] In our study, the percentage of faecal specimens examined in adult males, adult females and children is 60%, 15%, and 25 respectively.

The parasitic infestation reported in Afghanistan is 47.2%, Nepal, 66.6%, Bangladesh 53% and Caribbean island 43.5%.[9] In our study the frequency of parasitic infestation is 54% with predominately *Ascaris lumbricoides* (58%) in all faecal specimens. This is lower than that reported from Abbottabad where these were 81% and 48% respectively.[11] Frequency of parasitic infestation was 7.18% with 68.3% Ascariasis in Kashmir Valley followed by *Trichuris trichura* and *Taenia saginata* (4.6%).[12] A study reported worm infestation in children (60%) more than adults (30%).[13] In another study the frequency of helminth infestation reported is 81% with that of *Ascaris lumbricoides* 48%.[11]

The frequency of *Taenia saginata* in our study is 24% which is very high. It has been reported 3.45% in Azad Kashmir, 10% in Abbottabad and 0.4% in Vehari.[9,11,14] It was 4.60% in Kashmir valley India.[12] The frequency of *Taenia saginata* reported from Saudi Arabia is 11.02% among expatriate workers.[15] The highest reported frequency is from Bali, Indonesia varying from 1.1–27.5%.[16] The high frequency of Taeniasis in our study may be explained by the fact that cattle mostly cows are bred by locals and cow meat is consumed being available at cheaper rates as compared to mutton. *Taenia saginata* is well known for encystations in cow muscles and other tissues. Killing of these cysts requires at least 56 C^{o} core temperature. This is likely to be compromised by the partially cooked Bar BQ, especially after the present domestic gas supply crisis in the country. Moreover, the curative drug praziquental is not available in our country and is being imported. The study period follows *Eid-ul-Azha* when sacrificial animals mostly cows were slaughtered this year due to price hike of goats. Moreover, parasitic infestation and stool examination is neither taken seriously nor results are reported frequently. Nematodes were the most prevalent intestinal parasites than cestodes and protozoans.

In a study carried out in Swat, Pakistan, the proportion of different helminthic infestation in faecal positive specimens was: *Ascaris lumbricoides* was 39.8%, *Trichuris trichura* (19.1%), *Enterobius vermicularis* (8.25), *Ancylostoma duodenale* (3.64%), *Taenia saginata* (12.8%), *Hymenolepis nana* (10.1%), *Entamoeba histolytica* (4.36%) and Giardia species (1.69%). Children were found more infected than adults but adults were found infested with multiple parasites.[17]

In our study 30% of food handlers were found to have parasitic infestation. This is similar to results reported from the Sudan on food handlers which showed that 29.4% were harbouring intestinal protozoa in stool samples, *Entamoeba coli* in 15.3%, *Giardia lamblia* in 9.7%, and *Entamoeba histolytica* in 4.3%. Moreover, 2.7% of food-handlers harboured intestinal helminths: *Hymenolepis nana* (1.6%), *Schistosoma mansoni* (0.7%), and *Taenia saginata* (0.3%).[18]

In a survey carried out in 2005–06 in Qatar an overall prevalence of infections of all species combined in food handlers was 33.9% (13.6% for nematodes and 24.8% for protozoa.[19]

CONCLUSION

The high frequency of parasitic infestation in our set up especially of Taenia species requires measures to improve hygiene, water and sanitation. Meat and its products should be obtained from medically fit animals and meat cooked thoroughly before being consumed.

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