

Frequency of Worms Infestation in Adult Anemic Patients

Worms
Infestation in
Adult Anemic

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ABSTRACT

Objective: Among other causes, worm infestation is a common yet usually overlooked in the developing countries. Therefore the purpose of this study was to know its frequency among the anemic patients.

Study Design: Descriptive case series study

Place and Duration of Study: This study was conducted at Department of Medicine, Ayub Teaching Hospital Abbottabad from March 2018 to September 2018.

Materials and Methods: Through non-probability consecutive sampling technique, a sample of 215 patients was observed by using Expected Prevalence⁷: 5.3%, Confidence Level: 95%, Absolute Precision: 3%.

Results: Out of 215 patients, 40% were males while female patients were 60%. Mean \pm SD of age was 29 ± 2.77 . More over the frequency of worm infestation was found to be 48% percent.

Conclusion: The frequency of worms infestation in our study was found to be forty eight percent of adult patients with anemia in our setup.

Key Words: Worms Infestation, Adult, Anemic

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INTRODUCTION

Anemia is defined as reduced blood hemoglobin levels, which is either due to a genetic or acquired alteration in the shape or number of red blood cells.¹ It has numerous causes, some of which include bleeding in the gastrointestinal track or genitourinary track, reduced intake or absorption of iron due to certain gut diseases or medicine, reduced absorption of folic acid and cobalamin, increase hemolysis due to certain genetic or acquired diseases and/or various chronic inflammatory diseases.²

Among other causes, Helminths or parasitic worms are also common in developing countries. Throughout human history, parasites have infected humans.³ They have been found to cause anemia either through bleeding in the gastrointestinal (GI) track or by preventing the absorption of important micronutrient.⁴

The global burden of Soil Transmitted Helminths infection has been observed to be somewhat between 5 and 39 million disability-adjusted life years commonly attributed to anemia and/or reduced physical and psychological growth.⁵

Worm manifestations has been found to be associated with poverty and thus has higher prevalence in the under developed and the developing countries of the world compare to the modernized societies.⁶

When compared to the protozoan infections, the prevalence of helminthes intestinal infections have been observed to low i.e. 5.3% compared to 16.7 – 18% worldwide.⁷ Even then, according to one estimation more than one billion people living in the poor countries or living in areas where access to clean water is poor, are infected with one or more helminthes.⁸ Over crowdedness has also been observed to be an important associated factor, thus the high prevalence in India, Pakistan and China.

Among the helminthes, Ascariasis has particular high prevalence with over 1 billion people affected around the globe and over a 100 million people infected in India alone. The disease burden is high in Pakistan as well where it is estimated that more than 20 million people are infested.⁹

In addition to Ascariasis (*Ascaris lumbricoides*) the three other common parasites are the whipworm (*Trichuris trichiura*), and two hookworm species (*Ancylostoma duodenale* and *Necator americanus*).¹⁰ Keeping in view the enormous burden, World Health Organisation published guidelines in 2011 to control the parasitic infections. They recommended that the antihelminthic drugs such as mebendazole or

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albendazole should be used periodically to control the soil transmitted infections in endemic areas.¹¹ Even though numerous studies regarding the estimated prevalence of helminthes infection has been performed worldwide, local data was limited; therefore this study was planned to identify the frequency of worms infestation in an adult patient with anemia in our population. Local data may be used by policy makers, planners and caregivers to implement strategies.

MATERIALS AND METHODS

This study was conducted in the department of Medicine, Ayub Teaching Hospital, Abbottabad from 28/3/2018 to 28/9/2018. It was a descriptive case series and 215 patients, aged between 18 – 50 years, both genders, were selected through non-probability consecutive sampling. Sample size of 215 was calculated using the WHO software using the expected prevalence⁷ as 5.3%, confidence Level as 95% and absolute Precision as 3%. Patient with known hemolytic anemia, aplastic anemia, anemia of chronic disorder, lymphomas and leukemias were excluded from the study to control confounding.

In Male with Hemoglobin level less than 13.5g/dl and in Female with Hemoglobin level less than 11.5g/dl was labeled as anemia. Similarly an adult patient whose stool R/E becomes positive for any one cysts, ova eggs and worms like *Ancylostoma duodenale*, *ascaris lumbricoides*, *trichuris trichura* and *Taenia saginata* was labeled as worms infested.

After getting approval from the hospital ethics committee, the whole process and the purpose of the study was explained to the patient and a written consent was taken. Next, sample was taken by the investigator and was examined by the microbiologist in Ayub teaching hospital laboratory. All the data was recorded on the Pro forma.

Data was entered and analyzed by using SPSS version 16. Mean and standard deviation was calculated for quantitative variables like Age and Hb level. Frequencies and percentages were calculated for categorical variables like gender, worm’s infestation. Effect modifiers like age, gender and stool R/E findings were controlled through stratification. Post stratification Chi-square test was applied by taking $p \leq 0.05$ as significant.

RESULTS

In this study, a total of 215 patients were studied to determine the frequency of worms infestation in adult anemic patients. Out of 215 patients, 84(39%) patients were aged between 20 and 30 years, 77(36%) patients were aged between 31 and 40 years, while there were 54(25%) patients above 41 years of age. Mean age and SD was 29 ± 2.77 . There were 86(40%) males and 129(60%) female.

Frequency of worm infestation in 215 patients was analyzed as 103(48%) patients were infested with worms compared to 112(52%) patients who were found to have no worm infestation. As regards anemia, 144 (67%) patients had Hb between 8 – 10 g/dl while 71 patients (33%) had Hb ranged 11- 12 g/dl with mean \pm SD as 10 ± 1.38 g/dl.

103 patients were found to be worm infested out of which out of which 41 were males and 62 were females (P value = 0.9555). Other results are shown in the tables.

Table No. 1: Stool R/E findings (n=103)

Stool R/E findings		Frequency	Percentage
Cysts		34	33%
Ova		17	16%
Eggs		12	12%
Larvae		26	25%
Worms	<i>Ancylostoma duodenale</i>	2	12%
	<i>Ascaris lumbricoides</i>	8	56%
	<i>Trichuris trichura</i>	1	9%
	<i>Taenia saginata</i>	3	23%
Total		103	100%

Table No. 2: Stratification of worm infestation w.r.t age (n=215)

Worm Infestation	20-30 years	31-40 years	41-50 years	Total
Yes	40	37	26	103
No	44	40	28	112
Total	84	77	54	215

P value was 0.9976

Table No. 3L Stratification of worm infestation w.r.t stool R/E findings (n=215)

Worm Infestation	Cysts	Ova	Eggs	Larvae	Worms	Total
Yes	34	17	12	26	14	103
No	35	19	15	28	15	112
Total	69	36	27	54	29	215

P value was 0.9957

DISCUSSION

Worm infestation is a pandemic health problem, effecting billions of people around the world. More over the disease is more prevalent in the developing countries compared to the western world.^{12,13} Among the parasitic infections, Ascariasis holds more importance due to its higher prevalence. According to one estimate, it has affected more than a billion people worldwide. Similarly its prevalence has been found to be over 140 million, 86 million and 21 million in India, china and

Pakistan respectively, making it one of the most prevalent health problem in these countries.¹⁴ Keeping in view such high figures, this study was carried out to know the frequency of one it's complications – anemia. In our study, there were a total of 215 patients out of which there were 86(40%) males and 129(60%) female. More over the frequency of worm infestation was found to be 48% percent. In addition, we found that *Ascaris lumbricoides* was the most common (56%), followed by *Taenia saginata* (23%), *Ancylostoma duodenale* (12%) and *Trichuris trichura* (9%).

Mona et al in 2003 also studied the frequency of worm manifestations in children in Abbottabad and reported a much higher frequency of 86% compared to our findings of 48%. One reason may be that we studied the adult population compared to the much younger population studied by Mona et al.¹²

In another study conducted in Kashmir valley, the frequency of worm manifestation was found as 7.18%. Ascariasis was found to be the most dominant infection accounting for 68.3% of all manifestations followed by *Trichuris trichura* and *Taenia saginata* (4.6%).¹³ Another study reported a frequency of 39%.¹⁴

Worldwide different countries have reported a wide variation in the prevalence of worm manifestations. In Afghanistan the prevalence was found to be 47.2%, while in Nepal and Bangladesh it was found as 66.6% and 53% respectively.¹⁵

We observed that *Taenia Saginata* was found in 23% of patients infested with worms. Our findings were, however, considerably higher compare to the frequency of *Taenia saginata* reported by other studies i.e. 3.45% in Azad Kashmir, 0.4% in Vehari and 4.6% in the Kashmir province of India.^{12,13,16} One reason for high frequency of *Taenia* in our study population may be explained by the fact that beef kebabs, which is partially cooked cow meat, is a common cuisine eaten regularly by the local people. Since the cysts of *Taenia saginata* are found in cow muscles and survives in partially cooked meat, therefore they are found in higher frequency in our locality. Health authorities need to take appropriate measures to address this issue.

Khan et al¹⁷ studied the proportion of various worm manifestations in a study group related to education in Swat. He found that *Ascaris lumbricoides* was most common worm infestation with 39.8% of frequency followed by *Trichuris trichura* (19.1%). He reported that *Taenia Saginata* was found in 12.8% which is considerably lower than our findings. In addition, he also reported the frequency of *Enterobius vermicularis*, *Hymenolepis nana* and *Giardia* species (1.69%) while we did not observe the frequency of these parasites.

Our study had certain limitations. Firstly, our sample size was small, and we recommend that a larger sample be studied so that the health problem can be more addressed. Secondly, we did not study the frequency of other worms which are also found in our area. Finally,

we did not compare the severity of anemia with the type of worm manifestation.

CONCLUSION

Our study concludes that the incidence of worms infestation in adults anemic patients was found to be forty eight percent in our setup. In addition, we found that the frequency of *Taenia* species is much higher in our setup and therefore we provide recommendation to the health authorities to conduct further surveys to confirm our findings and to take appropriate measures to control the spread of the species.

Author's Contribution:

Concept & Design of Study:	Saqib Malik
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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