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FREQUENCY OF WORMS INFESTATION AND ITS ASSOCIATION WITH ANAEMIA IN ADULT PATIENTS

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ABSTRACT

OBJECTIVE: Objective of this study was to see infestation of worms in adult patients with anaemia.

METHODOLOGY: This was cross-sectional, descriptive study conducted at Tertiary Care Hospital for the period of 12 months (November 2021 to November 2022). Stool analysis for anaemic patients and controls was performed to detect infestation of worms. Data was analyzed using SPSS 24.0

RESULTS: A total of 400 patients were selected for determining the worms infestation frequency in adult patients with anemia. Out of 400 patients, 179 (45%) were aged between 18-30 years, 128 (32%) were between 31-40 years, and 93 (23%) were between 40-50 years. The mean age of patients was 28.44 ± 3.23 years. Male to female ratio was 1:2. The worm infestation frequency was 46%. Anemia was seen in 47 patients

CONCLUSION: This study explored good frequency rate of worm infestation in association with anaemia. Our results were mostly in supported by results of other studies. Higher authorities should take more serious steps in prevention of such parasitic diseases by conducting surveys, and to control the spread of parasites.

Keywords: Worms infestation, anaemia, adult population, stool examination.

INTRODUCTION

Anaemia is described as decreased levels of haemoglobin, caused by acquired or genetic changes in number or shape of the red blood cells[1]. Many causes are observed which cause anaemia including nutritional deficiencies, gastrointestinal bleed, genitourinary bleed, malabsorption syndromes, medication, increased destruction of blood due to acquired or genetic causes and inflammatory diseases[2].

In developing countries, infestation by parasitic worms or Helminths is common aetiology. They cause anaemia by gastrointestinal bleeding or cause decreased micronutrient absorption[3,4]. Helminths which are transmitted from the soil have been found to cause between 5-39 million morbid lifestyles, leading to reduced psycho-physical growth and anaemia[5]. Infestation by worms has been associated with poor quality of life; therefore, it is more prevalent in developing and under-developed countries[6].

The prevalence of infections by intestinal Helminths is observed low (e.g., 5.3%) as compared to protozoan infections (e.g., 16.7 – 18%) globally[7]. More than 1 billion individuals residing in under-developed countries or in areas with no or less availability of clean and sterile water are infected with intestinal Helminths[8]. The ratio is also high in counties with over-crowding e.g., China, India, and Pakistan etc. Globally more than one billion populations are affected with Ascariasis and in India alone; more than 100 million individuals are infected. It is also postulated that over 20 million individuals are infected with Ascariasis in Pakistan[9].

Additionally, Trichuris trichiura (whipworm), Necator americanus (hookworm) and Ancylostoma duodenale (hookworm) are also common[10]. Guidelines regarding these worm infestations and their management had been published by World Health Organization (WHO) in 2011. They recommended the use of anti-helminthic drugs (e.g., albendazole or mebendazole) should be used for the management and prevention of worm infestations in endemic areas[11]. Association of anaemia with worm infestations is studied limitedly; therefore, we designed this study to observe the presence of anaemia in patients with worm infestations in adult population.

MATERIALS AND METHODS

This was a cross-sectional, descriptive study conducted at tertiary care hospital. The study was carried out for the period of 12 months (November 2021 to November 2022). 400 stool examinations were performed. A total of 185 patients were selected for the study. Patients aged between 18 to 50 years, both males and females were included using non-probability consecutive sampling. Patients with bleeding disorders, haemolytic anaemia, aplastic anaemia, leukaemia/ lymphomas were excluded from the study. Cut-off value for anaemia was 13.5 g/dL for males and 11.5 g/dL for females. Patients were labelled as worm infested if stool examination was positive for any cyst, ova eggs and/or worms.

After getting approval from Ethical Committee, the process was explained, and informed consent was taken from all patients. The stool examination was performed by Pathologist in the

laboratory. All data was recorded and analysed using SPSS 24.0. Means and standard deviations were calculated for quantitative variables e.g., haemoglobin levels, age, and frequencies etc. Chi-square test was observed to see the correlation of anaemia with worm infestation.

RESULTS

A total of 400 patients were selected for determining the worm infestation frequency in adult patients with anaemia. Out of 400 patients, 179 (45%) were aged between 18-30 years, 128 (32%) were between 31-40 years, and 93 (23%) were between 40-50 years. The mean age of patients was 28.44 ± 3.23 years. Male to female ratio was 1:2. The worm infestation frequency was 46%. Anaemia was seen in 47 patients (Tables 1-3).

Table 9; Stool Examination Findings (n=185)

Stool Examination	Number	Percentage
Cysts	65	35.71%
Ova	39	21.08%
Eggs	21	11.35%
Larvae	42	22.70%
Worms	18	9.72%
Ancylostoma duodenale	*3*	*16.66%*
Ascaris lumbricoides	*11*	*61.11%*
Trichuris trichura	*3*	*16.66%*
Taenia saginata	*1*	*5.55%*

Table 10: Distribution of Worm Infestation with Reference to Age (n=185)

Worm Infestations	18-30 Years	31-40 Years	40-50 Years	Total
Yes	87	62	36	185
No	92	66	57	215

Table 11: Presence of Anemia in Various Stages of Worm Infestations (n=185)

Stool Examination	Anaemia (Frequency)	
	Present	***Absent***
Cysts	18	47
Ova	5	34
Eggs	2	19
Larvae	11	33
Worms	11	7

DISCUSSION

Infestation of worms is major pandemic global health issue, which affect a large population. Additionally, as compared to developed countries, it is more common in developing countries[12-13]. Among all parasitic infections, Ascaris has more importance because of its high prevalence rate. As per estimation, it is considered that more than one billion individuals are affected by this parasite globally. Likewise, the prevalence of Ascaris is over 140 million in India, over 86 million in China and over 21 million in Pakistan, making it very essential health concern in these countries. [(14)] Due to these problems, this study was conducted to see its association with anaemia. The worm infestation frequency in our study was 46.25%. Additionally, the infestation by various worms included Ascaris lumbricoides (61.66%), Ancylostoma duodenale (16.66%), Trichuris trichura (16.66%) and Taenia saginata (5.55%).

In a study by Mona et al. in 2003, it was seen that worm infestation frequency in children of Abbottabad was higher (86%) than our study. The reason behind this could be selection of population which was limited to paediatric group. [(12)] Another study in Kashmir revealed worm infestation in 7.18%. The dominant parasite was

Ascaris (68.3%), followed by Taenia saginata and Trichuris trichura (4.6%). [13] Alam et al. also discovered the frequency of 39%. [14]

Globally, the prevalence rate of worm infestation is variable in many countries. In Afghanistan, worm infestation prevalence was 47.2%, although in Bangladesh and Nepal, the frequency was 53% and 66.6% respectively. [15]

In our study, Taenia saginata was only found in one patient with worm infestation. This finding was somewhat similar to other studies including Azad Kashmir (3.45%), Vehari (0.4%), and Kashmir province in India (4.6%). [12-13, 16] The reason behind such frequency is the use of beef kababs, which is basically a partially cooked meat of cow, and is commonly used of individuals residing in these areas. As Taenia saginata cysts are seen in muscles of cow, hence they are found in increased frequency.

In Swat, Khan et al. performed a study on various worm infestations in a study group. He observed that Ascaris lumbricoides was the commonest worm found in 39.8%, followed by Trichuris trichura (19.1%), and Taenia saginata (19.1%). He also observed other parasites including Giardia species, Enterobius vermicularis, and Hymenolepis nana, although other parasites were not found. [17]

There were some limitations with our study. Firstly, the sample size was not large, so studies on large scale are needed to see more accurate data. Secondly, the frequency of other worms was not observed in the area. Finally, severity of anaemia with type of worm infestation was not seen.

CONCLUSION

This study explored good frequency rate of worm infestation in association with anaemia. Our results were mostly in supported by results of other studies. Higher authorities should take more serious steps in prevention of such parasitic diseases by conducting surveys, and to control the spread of parasites.

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