

Profile of Helminthic Infections in Patients Attending a Tertiary Care Hospital with Emphasis on Immunocompromised Patients

Sir,

Helminths are parasites which still cause a major disease burden in the world in comparison with other major diseases such as tuberculosis and malaria. More than 1.5 billion are infected with soil-transmitted helminths and are most common in tropics and subtropics.^[1] According to the World Health Organization, *Ascaris lumbricoides* infects over 1 billion people, *Trichuris trichiura* 795 million, and hookworms 740 million.^[1] Here, we report the data regarding the intestinal helminthic infections in patients attending a tertiary care center, Puducherry, and analyzed the burden of helminthic infections in immunocompromised patients.

This was a hospital-based study conducted during a period of 5 years (January 2012 to August 2016). Institutional Ethics Committee approval was obtained. The data regarding the age, sex, diagnosis, and macroscopic and microscopic findings of the stool samples were recorded, and the data were analyzed and represented in the form of frequency and percentage.

A total of 1643 stool samples were screened. Of these, 80 (4.8%) samples were positive for various helminths. Among the total samples, 1069 (65%) were from

immunocompromised patients of which, 5.7% (61/1069) had helminthic infection [Figure 1]. Most of the immunocompromised conditions were rheumatoid arthritis with eosinophilia on long-term steroids, 86.8% (53/61). Other immunocompromised conditions constitute about 13.1% (8/61). The nonimmunocompromised patients constitute around 23.4% (19/81) [Figure 2].

Coinfection of hookworm with *A. lumbricoides* was seen in two rheumatoid arthritis patients, and *Strongyloides stercoralis* with *A. lumbricoides* infection was seen in a patient with malabsorption syndrome. In one patient with rheumatoid arthritis, hookworm larva was seen.

In 2012 and 2013, hookworm was most common; in 2014, hookworm and *Taenia* spp. were predominant. However, in 2015 and 2016, it was *A. lumbricoides* followed by *S. stercoralis* and hookworm. Among the immunocompromised individuals, the positivity rate of helminthic infections was 5.7% (61/1069), and in immunocompetent individuals, it was 3.3% (19/574). The *P* value was found to be statistically significant, i.e., $P < 0.03$.

In our study, the most common age group affected was 31–40 years [Table 1] in the immunocompromised patients

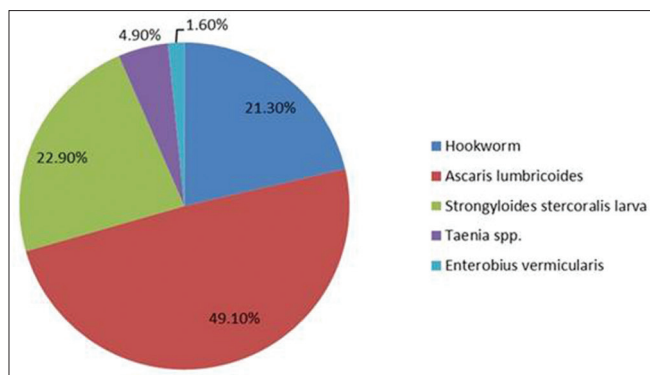


Figure 1: Distribution of helminths in immunocompromised patients

as similar to a study conducted by Kamki *et al.*, but the predominant sex affected was females in our study whereas the reverse was seen in the other study.^[2] Among the immunocompetent individuals, the most common age group was 21–30 years and males were common. Overall, the most common helminthic infection was *A. lumbricoides* (40.7%), followed by hookworm (29.6%), *S. stercoralis* (22.2%), *Taenia* spp. (4.9%), *Trichuris trichiura* and *Enterobius vermicularis* (1.2% each). These data were similar to previous studies done on the prevalence of intestinal parasites in the same institute.^[3,4] Furthermore, in a study done in Puducherry on school-going children,^[5] the prevalence of *A. lumbricoides* and hookworm was around 43% and 28% respectively, which was quite like our study, but *T. trichiura* was 10% which was very low in our study.

Among the immunocompromised patients, *A. lumbricoides* (49.1%) was most common followed by *S. stercoralis* (22.9%) [Figure 1]. This is in comparison to Kamki *et al.*, which also shows *A. lumbricoides* to be common followed by hookworm^[2] and also in the study by Bora *et al.*, where *Ascaris* was predominant followed by *T. trichiura*.^[6] While in immunocompetent patients, hookworm was most common (57.8%) followed by *A. lumbricoides* and *S. stercoralis* (15.7% each). The difference in detection of helminths in immunocompromised and immunocompetent patients was found to be statistically significant ($P < 0.03$).

To conclude, though there was a tremendous improvement in the living conditions of people in the present time, from this study, it was evident that the burden of helminthic infections still remains the same, especially in immunocompromised individuals. In addition, it indicates a necessity to include a routine screening of the stool samples irrespective of symptoms, especially among the immunocompromised patients which will facilitate their timely diagnosis and treatment. This will help prevent silent infection and hyperinfection in such patients.

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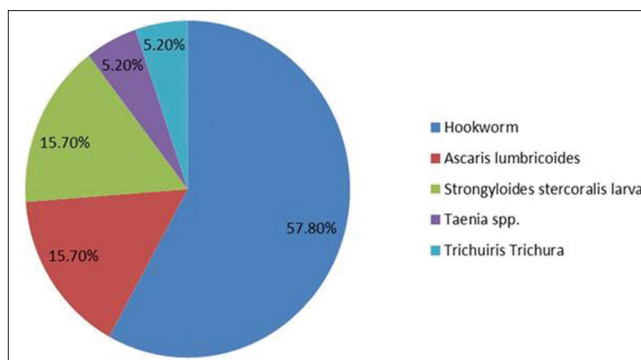


Figure 2: Profile of helminths in nonimmunocompromised patients

Table 1: Age and Sex Distribution

Age distribution (years)	Immunocompromised patients			Immunocompetent individuals		
	Total number	Sex		Total number	Sex	
		Male	Female		Male	Female
<10	2	0	2	1	1	0
11-20	2	1	1	2	2	0
21-30	10	2	8	6	3	3
31-40	17	2	15	3	2	1
41-50	13	3	10	3	3	0
51-60	12	4	8	2	2	0
>60	5	3	2	3	2	1
Total	61	15	46	20	15	5

Conflicts of interest

There are no conflicts of interest.

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REFERENCES

- Kaliappan SP, George S, Francis MR, Kattula D, Sarkar R, Minz S, *et al.* Prevalence and clustering of soil-transmitted helminth infections in a tribal area in Southern India. *Trop Med Int Health* 2013;18:1452-62.
- Kamki Y, Singh HR, Singh TN, Lungram P, Singh NB. Intestinal protozoal and helminthic infections in immunocompromised patients attending RIMS Hospital, Imphal. *J Med Soc* 2015;29:74-8.
- Rajkumari N, Jayaseelam V. Burden of intestinal helminth infection among school going children from a South-Asian Nation – Its implications. *Natl J Lab Med* 2016;5:6-11.
- Kumar M, Padukone S, Selvarathinam AP, Parija SC. Prevalence of intestinal parasites among patients attending a tertiary care centre in South India. *Int J Curr Microbiol App Sci* 2016;5:190-7.
- Ragunathan L, Kalivaradhan SK, Ramadass S, Nagaraj M, Ramesh K. Helminthic infections in school children in Puducherry, South India. *J Microbiol Immunol Infect* 2010;43:228-32.

6. Bora I, Dutta V, Lyngdoh WV, Khyriem AB, Durairaj E, Phukan AC. Study of intestinal parasites among the immunosuppressed patients attending a tertiary-care center in Northeast India. *Int J Med Sci Public Health* 2016;5:924-9.

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