Original Research Article

Trichuris trichura infestation in mentally retarded aashram - An eye opening case series

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Abstract

Introduction: Malnourished and mentally retarded patients are ignored people of the society. They are prone to development of many infections and parasitic infections are one of them. *Trichuris trichura* infection is caused by ingestion of embryonated eggs from soil. **Case:** This is a case series of 30 girls in Aashram. Two of them were admitted in Paediatric ward with complaints of fever, pain in abdomen and history of loose stools since two days. Their stool microscopic examination was positive for eggs of *T.trichura.* After 2 days one of the patient died and the cause was severe intestinal obstruction. Stool samples were collected from remaining 28 girls of Aashram, four caretakers and a cook. **Result**: Amongst 28 girls 24 were positive for eggs of *T.trichura* along with two caretakers and a cook. In some of these cases, co-infection with *Entamoeba histolytica, Giardia lamblia* and *Strongyloides stercolaris* was also present. All of them were advised deworming with mebendazole 500 mg TDS for 5 days. Decreased in worm load was found after repeat examination done after 10 days. **Conclusion:** Thorough investigation of the case is essential especially in these class of people who are prone to development of infection. Many of the serious manifestations as well as deaths can be prevented by starting early treatment of the patients.

Keywords: Aashram, *Entamoeba histolytica, Giardia lamblia,* mentally retarded, *Strongyloides stercolaris, Trichuris trichura.* Insulin-dependent diabetes mellitus, infancy, diabetic ketoacidosis, management, diagnosis.

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INTRODUCTION

Enteroparasites are worldwide in distribution and infections are usually seen in conditions with lowered immune response like malignancy, malnutrition, HIV infection and pregnancy, etc.[1,2] *T.trichiura* causes worldwide parasitic infection most prevalent in tropical and subtropical areas.[3] It is the third most common roundworm parasite affecting humans.[3] It is a infection of the large intestine and is called as whipworm.[4] Infection is caused by ingestion of embryonated eggs. Colonized eggs hatch and enter the crypts of the small intestine as larvae. After 1-3 months of maturation, the parasite migrates to the cecum. In the cecum, the parasite matures, mates, and lays eggs. Adult worms are 3-4 cm in length and have thin, tapered anterior regions,[5] and are thus commonly referred to as whipworms. Most infected individuals are asymotomatic, if lightly infected. Some people harbor hundreds or even thousands of worms, and they present with anemia, diarrhea, abdominal pain, weight loss, malnutrition, appendicitis, colonic obstruction, perforation, or intestinal bleeding. *Trichuris* dysentery syndrome (TDS) is a combination of symptoms, such as mucoid diarrhea and occasional bleeding.[6] The diagnosis is typically confirmed by detection of *T. trichura* eggs on examination of a stool sample; few reports have described detection of the parasite during colonoscopy.[6] Rectal prolapse can occur in children with extremely high numbers of *T. trichura* worms.[6] *Strongyloidiasis* is caused by 2 species of the intestinal nematode *Strongyloides*. The most common and globally distributed human pathogen of clinical importance is *Strongyloides stercoralis*.[7] The other species, *Strongyloides fuelleborni*, is found sporadically in Africa and Papua New Guinea.[7] It has variable

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manifestations from asymptomatic to hyperinfection, or disseminated infection. Infections are mostly mild and often asymptomatic in otherwise healthy individuals. Some patients have mild gastrointestinal, cutaneous, or pulmonary symptoms with or without fever. Risk factors for *Strongyloides stercolaris* infection also include travelling to an endemic region and low socio-economic status with poor hygiene conditions. *Giardia lamblia* is the only intestinal flagellate which causes endemic and epidemic diarrhoea in humans. It is well documented that in developing countries, infections are associated with poor sanitary conditions, poor water quality and overcrowding.[8] In developing countries, there is a very high prevalence and incidence of infection and data suggest that long-term growth retardation can result from chronic giardiasis. *Entamoeba histolytica* is the third leading parasitic cause of death in the developing countries, infecting more than 10% of world s population.[5] It is endemic in India and affects all age groups. Humans are affected through food and water contaminated with the cysts of *E. histolytica* due to feces, flies or unwashed hands of food handlers.[1] So, here we report a severe infestation of *T.trichura* in Mentally retarded Aashram. It is also a case series reporting multiple parasitic infestation as in few cases larvae of *Strongyloides stercolaris* and tropozoites of *G.lamblia* was found. This case series may bring into light the severity of infection in mentally retarded patients and the fatal outcome can be prevented by starting early therapy.

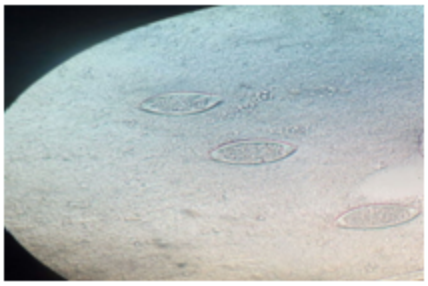
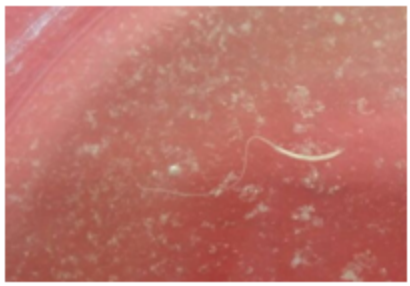
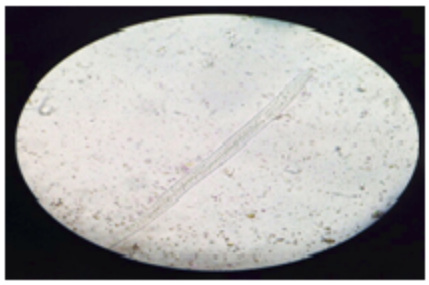
CASE SERIES

A 9 year old mentally retarded girl was admitted in paediatric ward with complaints of pain in abdomen, fever and history of loose stools 8-9 times a day since 2 days. Her stool sample was sent for microscopy in microbiology department. On gross examination, the stool was watery with mucoid flakes on bottom. On microscopic examination there were abundant pus cells and abundant eggs of *Trichuris trichura.* The eggs were barrel shaped, 50x23 µm in size with mucous plugs at both ends, and were also bile stained.[5] The egg load was calculated for *Trichuris trichura* by Stole's[6] method and it was 250. Detail history of patient was asked to caretaker of Aashram. At that time we came to know, one more girl of same Aashram was admitted with similar complaints. So we have collected her stool sample for examination and it also revealed eggs of *T.trichura.* After 2 days, one of the admitted girl died and the cause was intestinal obstruction. On her sigmoidoscopy there was heavy worm infestation. We were called to attend the post mortem and a part of large intestine was taken. On gross examination of large intestine it was heavily infested with worms. When worms were examined they were 4-5 cm in size with one end thick and other end thin. That was confirmed as whipworm.

Table 1: The other findings of 2 admitted girls were as follows

	Case 1	Case 2
Weight	13kgs	15kgs
Chief complaints	Pain in abdomen, fever and history of loose stools 8-9 times a day since 2 days.	Pain in abdomen, fever and history of loose stools 6-7 times a day since 2 days, vomiting.
Degree of mental retardation	90%	65%
Microscopic examination	Eggs of *T.trichura*	Eggs of *T.trichura.*
Haemoglobin	4.8g/dl	7.2g/dl
WBC's	15,544/mm^3	13/mm^3
Neutrophils	68%	69%
Lymphocytes	7%	9%
Monocytes	1%	-
Eosinophils	24%	22%
Basophils	-	-
Outcome	Expired	Survived.

On enquiry, the caretaker also informed that, there are 28 more girls in that mentally retarded Aashram. Next day we visited that Aashram to trace the source of infection and we found that there were pigs in 3 metres area. They were in large numbers in the area where waste material is dumped. Visit was also given to school where 6 girls with lesser degree of mental retardation used to go. Sterile containers were given to collect stool samples of all other girls and also all caretakers as well as cook. Within 2 days we received samples of all these people. And the results were as follows-Amongst 28 other girls, 24 were positive for eggs of T.trichura. Worm load was calculated for all the girls and all were severely infected i.e. in all of them eggs were more than 200 as calculated by Stole's method. And 4 girls didn't reveal any of the eggs. 2 caretakers and cook were also positive for *T.trichura.* Amongst 24 girls who were positive for *T.trichura*, 5 of them also revealed larvae of *Strongyloides. stercolaris.* The larvae were 200µmX15µm in size, with short buccal cavity, double bulbed oesophagus,a prominent genital primordium and anal pore from posterior end.[9] And 3 other girls were positive for tropozoites of *G. lamblia* and 8 had co-infection of *Trichuris and E.histolytica.* The tropozoites were about 12µmX8µm size, pear shaped and bilaterally symmetrical with ventral disc, flagella, axostyles and motile with a falling leaf appearance. Cysts of *Entamoeba histolytica* size 12µmx20 µm, uninucleate to quadrinucleate.

Legend
Figure 1: Showing eggs of *T.trichura.*
Figure 2: Showing adult worm of *T.trichura* isolated from large intestine during Post mortem.
Figure 3: Showing larvae of *S.stercolaris.*

Seroprevalence of parasitic infection in that Aashram was

Table 2: Showing seroprevalence of females infected in Mentally retarded Aashram

Total number of females residing in Aashram(30 girls+4 caretakers+1 cook)	Total number of females associated with either of the parasitic infection-	Percentage of infected females in that Aashram
35	29	82.85%

Table 3: Showing type of parasitic infection in affected females.

Type of parasite	Number of females affected(n=29)	Percentage (%)
Trichuris trichura alone	13	44.83
T. trichura + S.stercolaris	5	17.24
T. trichura +G.lamblia	3	10.34
T. trichura + E.histolytica	8	27.59

All the patients were prophylactically started with mebendazole 100mg TDS for 5 days. Samples were repeated after 10 days and decrease in worm load was found in all the patients. Samples were collected from Sewage which was in contact with water source in Aashram. It was also positive for eggs of *T.trichura* microscopically. The stool culture was negative for pathogenic bacteria in all the patients.

DISCUSSION

In our study, in 82.85% were positive for parasitic infection. In the study of Fernandiz *et al*, the prevalence in rural setting was found in 52.8% and in rural setting it was 33%.[10] The prevalence in our study was more could be due to the fact that, our study composed only of mentally retarded females. And this people are more prone to picas and hence more transimission of parasitic infection from soil can take place. In the study of Fernandiz *et al* all the children attending schools were taken. In a study of rao VG at Madhya Pradesh, the prevalence of parasitic infestation in pre-school children was found to be 48%.[11] Lower incidence rates were found in study of Narayan Shrihari *et al*[12] and Dnyaneshwari *et al*[13]. In our study, *T.trichura* was the predominant parasite and it was found in all the cases either alone (44.83%) or with other parasites(55.17%) cases. This findings correlates with the study of Ivan *et al* in which *T.trichura* was the predominant parasite.[14] In the study of Ivan *et al* in mentally retarded patients, fecal samples obtained from 86 patients and 43 staff members. Approximately 52.3% of the patients and 13.9% of the staff members harbored parasites. Forty-five percent of the patients were infected with *Trichuris trichiura,* 1.2% - hookworms, 19.8% - *Escherichia coli*, 1.2% - *Endolimax nana,* 2.3% - *Giardia lamblia* and 2.3% - *Dientamoeba fragilis.* Nine percent of staff members harbored *T. trichiura* and 7% *E. coli.* In the study of Rao VG, the predominant parasite was H.nana and in study od Dnyaneshwai *et al* it was E.histolytica amongst protozoal parasites ad A.duodenale amongst helmentics. One of the important noting in our study was death of one patient due to intestinal obstruction. And on post mortem findings, the large intestine was loaded with worms. In a case report of Bahon *et al*, 84 year female was admitted with complaints of chest symptoms which was followed 2 days later by nausea and vomiting and bowel stoppage. Laparotomy indicated intestinal obstruction by a tumour. A partial right sided ileocolectomy was performed.[15] Pathological examination of the resected bowel revealed heavy infestation with T trichiura causing a pseudotumour following a proliferative inflammatory response. Post operative recovery of that patient was uneventful. So, T.trichura can cause severe intestinal obstruction and may lead to death of the patient.[15] In our study, the visit to Aashram was made and samples from 28 girls , 4 caretakers and 1 cook were collected. These cases would have been missed if the field visit wouldn't have been done. All the patients were started with mebendazole and general information about hygiene was

given to all the patients. The start of early therapy could have reduced the fatal outcome in our case. The egg load was reduced in all the patients when repeat sample was taken 10 days later. The most important part of study was that, the source of infection was traced. It was spillage of sewage which was coming in contact with water source. The garbage collection point was just 3 metres away from the Aashram which was favourable spot for pigs.

CONCLUSION

Special emphasis should be given on the hygiene of mentally retarded patients. Even minor infection can lead to fatal outcome. Field visits should be made so as to look for the other infected persons.

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