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A Case Report of an 11-Year-Old Child with Intestinal Ascariasis Successfully Treated with a Single Dose of Albendazole

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Abstract:

Most cases of ascariasis can be misdiagnosed in asymptomatic conditions as well as when parasites are present in low count. Therefore, employing the Formalin-ethyl acetate technique as a confirmatory test in routine laboratory examination of stool is important to correctly identify and manage the case of intestinal parasitic infestation. This is a case report of ascariasis in an 11-year-old boy who complained of abdominal pain and discomfort along with nausea and vomiting. The diagnosis was made through Stool microscopic examination by formalin-ethyl acetate concentration technique which revealed the presence of *Ascaris lumbricoides* with eggs. The patient was successfully treated with a single dose of 400 mg albendazole. Then the microscopic examination of stool after 7 days of examination turned to be negative for parasites with subsided symptoms, normal blood test report, and patient with signs of recovery. Poor sanitation and habits are associated with intestinal parasitic infection in children. The formalin ethyl-acetate concentration method is much more sensitive than the wet mount technique in stool examination for parasites.

Keywords: *Ascaris lumbricoides; Albendazole; Ascariasis*

Introduction

Intestinal parasitic infection is a common health issue in tropical and sub-tropical nations [1]. Soil-transmitted helminths are known to infect over 1.45 billion people worldwide, with an estimated 819 million individuals infected with *A. lumbricoides* [2]. Infection by *A. lumbricoides* is mediated through the ingestion of eggs with several asymptomatic cases [3] [4]. *Ascariasis* contributes to child morbidity through malnutrition, anemia, and nutrient deficiencies [5]. Microscopic examination of stool provides strong evidence to establish parasitic infections [6]. Children have the highest morbidity, particularly those with a heavy worm burden. Reduced physical fitness, growth retardation, and digestive and respiratory issues can all be caused by *A. lumbricoides* [7]. The process of infection happens when eggs—which are typically found in food or soil-are swallowed. The small intestine's lumen is home to adult worms, where the female deposits her

unembryonated eggs, which are expelled along with her waste. To become infectious, the eggs must go through three stages of growth in the open, during which they are exposed to external factors.[8] Research findings indicate that the low sociodemographic and socioeconomic status of children are significant contributors to the high frequency of sexually transmitted infections. Because of poor sewage systems and inadequate infrastructure, intestinal parasitism is more common in rural than in metropolitan settings [9]. Helminthic infections can have a detrimental impact on children's academic performance by causing iron deficiency anaemia (IDA)12, protein-energy malnutrition, stunting (a measure of chronic undernutrition), wasting (a measure of acute undernutrition), listlessness, and abdominal pain [10]. This a case report of ascariasis in an 11-year-old child with successful treatment by anthelminthic drug. The repeated stool examination revealed complete eradication of the worm.

Case History

An 11-year-old male child attended a tertiary health care center in May 2023 with complaints of nausea, vomiting, abdominal pain with discomfort, and loss of appetite. He had such symptoms for the last two months. The child was a resident of the Dharan sub-metropolitan city, in Nepal. He had no other previous or current history of medical complications. However, the boy had never received anthelminthic medication in the last few years. The boy had poor attention to hand washing and was known to drink direct tap water. A blood test was performed which reported slight anemia (10.4 g/dL), leukocytosis (12000/mm3), and 10% eosinophil.

For stool examination for parasites, at first, the Wet mount was prepared but turned out to be negative. Then after, Stool microscopic examination by formalin-ethyl acetate concentration technique (FECT) [11] was performed which revealed adult *A. lumbricoides* with rounded, tapers at both ends with ventrally curved tail-end, unfertilized egg, and undigested food particles (Figure 1). After the confirmation of Roundworm, the patient was declared positive for ascariasis and was administered Albendazole (400 mg) in a single dose. Then the microscopic examination of stool on day 7 turned out to be negative for parasites. The clinical symptoms subsided, the blood test report turned out to be normal and the patient showed signs of recovery.

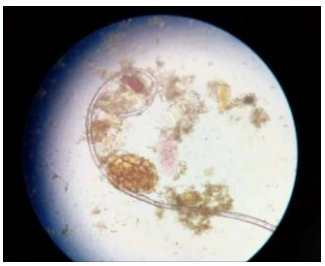

Figure 1: *A. lumbricoides* with an unfertilized egg from the stool of an infected boy.

Discussion

A Fewer loads of *A. lumbricoides* are asymptomatic whereas heavier loads exhibit clinical manifestations and sometimes malnutrition. The clinical manifestations of intestinal ascariasis are characterized by abdominal discomfort, right upper quadrant pain, nausea, vomiting, and loss of appetite [12]. In this study, the patient had symptoms of abdominal discomfort with pain, nausea, vomiting, and loss of appetite which subsided after albendazole therapy. Anemic conditions are common among children suffering from ascariasis and heavy

infections can impair the nutrition, physical growth, and development of a child [13].

In developing nations like Nepal, open defecation around water resources is the main cause of fecal-oral route transmission of parasites. Moreover, the lack of washing hands with soap and water before meals and after latrine, drinking untreated water, consuming contaminated aquatic vegetation, and other activities related to poor sanitation are the main etiological factors behind intestinal parasitic infestation [14]. Andrade et. al (2015) reported Abdominal pain, nausea, vomiting, diarrhea, and the presence of worms in the vomit or feces of an infected child [15]. In one study by Pasaribu and Pasaribu (2014) a dead female *A. lumbricoides* was obtained after 2 days of albendazole 400 mg therapy and the symptoms subsided after a few days [16]. Most studies reported normal bowel function and healed abdominal wounds after a few days of albendazole therapy which is in agreement with the present study [15, 17].

Stool microscopic examination is an effective tool for the detection of parasites and eggs in the stool of infected patients. In this study, the Formalin-Ethyl Acetate Concentration Technique (FECT) was employed which allows sensitive detection of parasites in both symptomatic and asymptomatic patients. However, in resource-limited areas, wet mount and saline mount techniques are still preferred.

The child had a history of drinking direct untreated water from the tap and no longer received any anthelminthic drugs. So child might have acquired a parasite from contaminated water. Many other studies have reported ascariasis in children in Nepal which has addressed the low level of sanitation as the main etiological factor behind the prevalence of the parasite[18-20].

Oral administration of a Single dose of Albendazole (400mg) eradicates the parasites successfully [21]. With this agreement, a single dose of the drug could successfully eradicate Roundworm from the child. Annual deworming programs, in addition to awareness on hygiene and sanitation, should reach door to doorstep and especially in schools and communities for complete eradication of parasitic infections from humans. This case study reveals the unidentified cases of intestinal parasitosis in children.

Conclusion

It is important to consider *A. lumbricoides* infection in preschool-aged children exhibiting symptoms of abrupt acute intestinal blockage, as it is quite common in underdeveloped nations. *Ascaris* infestations can typically be successfully treated by anti-helminthic drugs like albendazole; however, surgery may be necessary in cases of intestinal blockage. The formalin ethyl-acetate concentration method is much more sensitive than the wet mount technique in stool examination for parasites. In endemic zones, changes in cleanliness, health education, and anthelmintic treatment are necessary to prevent significant, perhaps fatal consequences from *A. lumbricoides* infestations.

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Consent

consent was obtained from the patient's guardian for the case study and publication of this case report.

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