

CASE REPORTS

UNUSUAL CASE OF RECURRENT SEVERE ANAEMIA AND HYPOALBUMINEMIA IN AN INFANT

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ABSTRACT

Hookworm infestation is prevalent in children and adults living in tropical countries. The major clinical manifestations of hookworm disease are the consequences of chronic intestinal blood loss. Iron-deficiency anemia and hypoalbuminemia develop when blood loss exceeds the intake and reserves of host iron and protein. *Ancylostoma duodenale* infestation only rarely occur in infants. We report an infant presenting as recurrent severe anemia and hypoalbuminemia due to *Ancylostoma duodenale* infestation.

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Introduction

Recurrent severe anemia requiring transfusion in infancy is usually due to hematological conditions such as hemolytic anemia. Hookworm infection can occur at any age, the highest rate is in preschool and school age children, but it is very rare amongst infants (1-5). Hookworm infestation, though uncommon, has varied clinical presentations ranging from chronic blood loss leading to mild chronic anemia as well as severe anaemia requiring blood transfusion. Nutritional deprivation presenting as protein losing enteropathy is also known to occur with *Ancylostoma* infestation due to severe involvement of jejunum and proximal ileum. We report a case of a 6-month-old infant with severe anaemia and protein losing enteropathy due to *Ancylostoma* infestation who required multiple transfusions.

Case Report

A 6-month old male infant, 2nd issue of non-consanguineous marriage, presented with respiratory distress and diarrhoea for 12 days. There was no history of fever, jaundice or abdominal distension. He had received 2 packed red blood cell (PRBC) transfusions in the past 3 months. He was exclusively breastfed till 4 month of age and then as mother had inadequate milk output, the child was given approximately 500ml of diluted (1:1) cow's milk per day along with intermittent breastfeeding, which provided approximately 165 kcal and 8.7 gm of proteins per day. The child was fed through single bottle, the cleansing of which was poor. On examination, he had tachycardia (heart rate-160/min), tachypnea (respiratory rate-45/min), pallor, pitting oedema over bilateral legs up to knees, facial puffiness, systolic murmur, basal crepitations and hepatomegaly

(liver span of 7.5 cm). His weight was 5 kg (<3rd percentile) and length was 58 cm (<3rd percentile). Investigations revealed haemoglobin 3 gm%, mean corpuscular volume (MCV)-50fl, mean corpuscular hemoglobin (MCH)-26 pg, corrected reticulocyte count 0.5%, total leukocyte concentration (TLC) 7500 cells/cumm (polymorphs-40%, lymphocytes-45%, eosinophils-15%) and platelet count of 4,00,000 cells/cumm. Peripheral blood smear showed microcytic hypochromic anemia. Total protein was 3.4 gm/dl and albumin 1.2 gm/dl. Renal function tests and serum electrolytes were normal. Iron studies revealed serum iron 20 µgm/dl (normal range for the age 30-70 µgm/dl), Total iron binding capacity (TIBC) 490 µgm/dl (normal range for the age 100-400 µgm/dl), Transferrin saturation 2% (normal range for the age 17-34%) and ferritin 1.5 ng/ml (normal range for the age 7-140 ng/ml). Urine albumin was absent and HIV status of mother was non-reactive. Stool microscopy of both infant and mother showed presence of eggs of *ancylostoma duodenale* and stool for occult blood was positive. He was treated with one unit of PRBC transfusion (15 ml/kg) and syrup albendazole 200 mg once a day for 3 days. He was given oral iron supplements (elemental iron-6 mg/kg/day) for 6 months along with calorie and protein dense complementary feeds as a part of nutritional rehabilitation. Mother was treated with tablet albendazole 400 mg once a day for 3 days along with iron supplements (200 mg of elemental iron per day) for 6 months.

On follow up visit, after a week, infant was clinically well. Stool examination of both child and mother showed no evidence of *ancylostoma duodenale*.

Discussion

Although anemia is common in infancy, recurrent severe anemia requiring transfusion, is usually due to hematological conditions such as hemolytic anaemias. Infantile hookworm disease has only uncommonly been reported particularly from China, Nigeria, Nepal and aboriginal communities of Australia.^{1,2,3,6,7} There are a few reports of hookworm infestations in infants

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from India; two of these reports are among infants coming from Nepal.^{1,2,4,7} Helminthic infestation causes significant disease burden in developing countries and can occur at any age, highest rate of which is in preschool and school age children, but it is very rare amongst infants. It usually occurs in children when they begin to crawl or walk barefoot and come in contact with contaminated soil. Transmission of hookworm infection in infants can occur from contaminated soil by penetration of the skin by filariform larvae of hookworm, if infants lie bare skin on the soil, or from infected mothers through milk during breast feeding and rarely through placenta.^{2,3} In our case mode of transmission was probably through the contaminated soil or from contaminated hands of mother, considering a low socioeconomic background with poor sanitary facilities. The mother of the infant was also infested with *ancylostoma duodenale*.

Ancylostoma duodenale inhabits jejunum and proximal ileum and it sucks blood from intestine which leads to iron deficiency anaemia, hypalbuminaemia and malnutrition. Diagnosis is established by stool examination for the characteristic eggs. Sensitivity of stool examination to pick up ova and cyst increases from 58.6% to 95% upon increase in number of stool examinations from one to three.⁵ Treatment of *ancylostoma duodenale* consist of using antihelminthics drugs such as albendazole, mebendazole and pyrantel pamoate; although the safety of these drugs has not been well established and there is limited experience to use these antihelminthic drugs for children less than 2 years of age. Prevention can be done by health education about improving hygiene & sewage disposal practices with periodic deworming.⁸

Conclusion

This case highlights the importance of recognising infantile hookworm disease in young infants coming

from low socioeconomic families, having poor environmental hygiene and sanitation presenting with severe anaemia and melena.

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Compliance with Ethical Standards

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References :

1. Singh K, Singh R, Parija SC, Faridi MM. Infantile hookworm disease. *Indian J Pediatr* 2000; 67: 241.
2. Tiwari L, James J, Chowdhary S, Sharma A, Puliye JM. Severe anemia owing to hookworm in a 12-day-old Nepalese infant. *Ann Trop Paediatr* 2004; 24: 361-363.
3. Yu SH, Jiang ZX, Xu LQ. Infantile hookworm disease in China. A review. *Acta Trop* 1995; 59: 265-270.
4. Kang G, Mathew MS, Rajan DP, Daniel JD, Mathan MM, Mathan VI, et al. Prevalence of intestinal parasites in rural Southern Indians. *Trop Med Int Health* 1998; 3: 70-75.
5. Nazer H, Greer W, Donnelly K, Mohamed AE, Yaish H, Kagalwalla A, et al. The need for three stool specimens in routine laboratory examinations for intestinal parasites. *Br J Clin Pract* 1993; 47: 76-78.
6. Otaigbe BE, Eneh AU, Orumabo B. Hookworm infestation in a 3-month old female. *Niger J Med* 2005; 14: 227-230.
7. Budhathoki S, Shah D, Bhurtyal KK, Amatya R, Dutta AK. Hookworm causing melaena and severe anemia in early infancy. *Ann Trop Paediatr* 2008; 28: 293-296.
8. Hotez PJ. China's hookworms. *China Q* 2002;172:1029-1041