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Intestinal Parasitic Infections: A Rare Coinfection by *Ascaris lumbricoides* and *Eristalis tenax* in a 10-month-old Infant in Cameroon

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We report a rare case of coinfection by intestinal parasitosis and myiasis (*Ascaris lumbricoides* and *Eristalis tenax*) in a 10-month-old female infant living in Yaounde, an urban area in a low- and middle-income country. Incidental discovery was made following symptoms of acute vomiting and diarrhea with a massive release of an estimated thirty adult *A. lumbricoides* worms and *E. tenax* larvae through nasal, buccal, and anal routes. Diagnosis was based on the macroscopic appearance of the worms and the fly larvae. Treatment with benzimidazoles was initiated, with a resolution of symptoms within one week. This case highlights the challenges of public health eradication guidelines (such as the antihelminthic drugs marketing authorization) in our setting and discusses the protocols of management in less than 1-year-old infants in sub-saharan Africa, a region of high helminthic endemicity.

Key Words: *Ascaris lumbricoides*, *Eristalis tenax*, infant

INTRODUCTION

Worldwide, ascariasis is the most common intestinal parasitic infection affecting about 24% of the population, with a greater burden on children from low- and middle-income countries (LMICs) (1). About 7.6 million children of age 1–15 years are at risk of soil-borne infections in Cameroon (2). Ascariasis is transmitted by ingestion of eggs of a roundworm called *Ascaris lumbricoides* present in the soil, water, or contaminated food. Interestingly, intestinal myiasis caused by larva from the drone fly *E. tenax* is of rarer occurrence, with less than 50 reported cases in the scientific literature (3–6). The originality of this case lies in the massive and double infestation, young age of the child, and challenges of treatment with anthelminthics in this age group. Children below age one in LMICs grow up in the same precarious conditions as their elders and come in contact with the soil from 4 to 6 months of age. With their comparatively weaker immune systems, they are therefore at risk of being infested by geohelminths. However, marketing authorizations (MAs) for antihelminthics do not permit usage in infants below 2 years of age; whereas the World Health Organization (WHO) indicates the need for low dose deworming as from the age of 1 year (1).

Case Presentation

A 10-month-old female infant with a 2-week history of abdominal distension and anorexia, and albendazole 200 mg administration, was referred to our department for management of sudden onset vomiting and asthenia. The patient was born vaginally, at term with a birth weight of 3750 g. Her feeding went from exclusive breastfeeding till she was 4 months old, followed by the introduction of baby formula with bottled water, and porridge from age 6 months. She sleeps under mosquito nets and has taken all her scheduled vaccines.

On initial presentation at a health care facility, the anthropometric measurements were normal for age and vital signs were stable. On examination, she was asthenic and had a slightly distended abdomen. Hospitalization was advised, and treatment with intravenous infusions, rehydration salts, and zinc tablet 20 mg were begun. Malaria and stool tests were both negative. Evolution one day later was marked by 2 episodes of vomiting, and the emission of 4 worms from the nostrils (Fig. 1), three from the mouth, and 7 during a bowel movement (Fig. 2). Flubendazole syrup was then prescribed twice daily. Further release of 15 more worms the next day, then prompted her referral to us.

On arrival, one white worm in the diaper was present mixed with semi-liquid stool indicative of the live adult form of *A. lumbricoides*. Additional workups revealed hypereosinophilia and

FIGURE 1. Four roundworms released through the nose.

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FIGURE 2. Diaper with semi-liquid stool containing 7 whitish roundworms identified as *Ascaris lumbricoides.*

FIGURE 3. Fish-like larvae with a hook photograph identified as *Eristalis tenax* based on morphology.

basophilia. The patient was then discharged with rehydration salts, flubendazole, and zinc.

Upon returning home, the mother reported persistent watery stool with more *A. lumbricoides* and a small mobile "fish-like larva with a hook" identified as *E. tenax* based on morphology (Fig. 3). Three days later, diarrhea stopped, and no worms were present on the diaper. She was followed up for 2 months and there was no relapse.

DISCUSSION

E. tenax is a harmless insect of the Diptera order that lives in polluted water (4,7). Contamination occurs through accidentally ingested larvae. Despite a majority of them being destroyed during digestion, some may survive, causing gastrointestinal myiasis (5). *A. lumbricoides* is a nematode of the family of the Ascarididae. This worm is transmitted by ingestion of eggs from food, objects, or water contaminated by human stool (1). No cases of coinfection between these 2 parasites have been described before.

Our patient is an infant of age less than 1 year, living in a poor community in an urban area, in an LMIC, in whom diarrhea and vomiting were the main clinical symptoms. The inability to ascertain the presence of other signs and include parasitosis as the possible diagnosis is due to knowledge gaps in patients of this age regarding parasitosis. Clinical diagnosis of these parasites is mainly by detection of eggs in stools and/or the adult forms in stool or vomitus, while the presumptive diagnosis is based on hyper eosinophilia as found in this case. The negative stool test with regards to eggs collection for *Ascaris spp* confirms the process of intermittent fecal elimination of eggs during parasitic infections. This reinforces the recommendations on collecting at least 3 samples, at 3-day intervals. This process increases the quality of the sample analyzed.

The management of digestive helminthiases is based on the preventive and curative administration of anthelminthics from the age of one year as recommended by WHO (8). The efficacy of albendazole has been demonstrated in helminthic infections but remains questionable in gastrointestinal myiasis in which the anal elimination of the worm is spontaneous. Our patient raises the issue of deworming before the age of 1 year in an area of high prevalence and in conditions of poor hygiene. These infections affect growth rate, protein-energy balance, and iron availability and therefore reduce mental development (9). However, these complications were absent in our patient. Presently, Cameroon is facing challenges of poor hygiene, promiscuity in urban areas, and insufficient supply of potable water. Yaounde is a cosmopolitan city located in the Centre Region where several social classes coexist, and is thus, a favorable environment for the spread of parasitic infections. This infection burden persists despite the national program strategies of, mass deworming, and counseling aimed at reducing the parasitic load in children from age one, though not solving the problem of permanent contact with soil and dirty water. Nevertheless, the question of the administration of anthelminthic drugs to infants remains. Therefore, there is a need to reconsider recommendations on prophylaxis and the systematic search for parasites in children before age one by repeated direct examination.

CONCLUSION

This is a case of coinfection of *A. Lumbricoides* and *E. Tenax* in a 10-month-old infant. The diagnosis was made clinically. A positive diagnosis of parasitosis remains a challenge. because direct examinations are not repeatedly done. This case points out the issue of Anthelminthic Drugs' MA and the protocols of management in infants aged less than one year in an area of high endemicity.

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