Ankylostomiasis

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Abstract

Ankylostomiasis or hookworm infection is an intestinal infection caused by Ancylostoma duodenale or Necator americanus. Clinical diagnosis is difficult because this infection does not present specific symptoms. The identification of hookworm eggs in the fecal sample during microscopic examination is indicative of the infection. Hookworms are estimated to infect over 1300 million individuals worldwide. The infection has been recognised as an important cause of intestinal blood loss leading to iron-deficiency anaemia (IDA). Ankylostomiasis affects significant part of the population in tropical and subtropical areas because the hygienic and climatic conditions are particularly favourable for the transmission. In developed countries, hookworm infection is rare, however, it can be observed in travellers returning from developing countries or in immigrants. Four drugs are indicated for the treatment of hookworm infections (albendazole, levamisole, mebendazole, pyrantel pamoate). In area of high endemicity, the recommended strategy for disease control is the periodical (once or twice a year) treatment. The same approach is suggested for expatriates from developed countries living temporarily in endemic areas.

Keywords
Ankylostomiasis, Hookworms, Ancylostoma duodenale, Necator americanus

Disease name / synonyms
Hookworm infection / Ankylostomiasis

Definition / diagnostic criteria
Ankylostomiasis is an intestinal infection caused by one of the two hookworms species (Ancylostoma duodenale - Necator americanus). Clinical diagnosis is difficult because this infection does not present specific symptoms. The identification of hookworm eggs in the fecal sample during microscopic examination is indicative of the infection.

Differential diagnosis
The differentiation between hookworm infection and other soil-transmitted helminthiasis (infections from Ascaris lumbricoides and Trichuris trichiura) is not essential because the therapeutic interventions are the same.

Etiology
The parasite inhabits the small intestine and reproduces sexually. The fecundated female produces eggs that are passed into human faeces and deposited in the environment. In absence of appropriate sanitation and where climatic conditions are favourable, the eggs of
**Epidemiology**

Hookworms are estimated to infect over 1300 million of individuals worldwide (WHO 2002). The infection affects significant part of the population in tropical and subtropical areas due to hygienic and climatic conditions that are particularly favorable for worms to complete their life cycle. In an infected population, hookworms are unevenly distributed in the way that most individuals harbor just a few worms while a few hosts harbor large worm burdens (Anderson et al. 1991). The heavily infected individuals are at the highest risk of disease and the major source of environmental contamination (Bundy et al. 1995). Such distribution is probably due to a combination of differences in exposure to infection, in susceptibility and in the ability to mount effective immunity. Age-specific prevalences show a rise in childhood with a plateau in young adults.

In developed countries, hookworm infection is rare, however, it can be observed in travelers returning from developing countries or in immigrants.

**Management including treatment**

Four drugs are recommended by the World Health Organization (WHO, 2002) for the treatment of hookworm infections:

- Albendazole 400 mg (single administration)
- Levamisole 40 mg/Kg (single administration)
- Mebendazole 500 mg (single administration) or 200 mg/day for three days
- Pyrantel pamoate 10mg/Kg

In area of high endemicity, the recommended strategy for disease control is the periodical (once or twice a year) treatment. The same approach is suggested for expatriates from developed countries living temporarily in endemic areas. Particular attention should be given to women of childbearing age and children who are considered groups at risk for the morbidity due to hookworms.

Several intervention trials have shown that periodical anthelmintic treatment improves haemoglobin levels in schoolchildren (Stoltzfus et al. 1998; Guyatt et al. 2001) and pregnant women (Torlesse and Hodges 2001). The other nutritional deficits associated with hookworms and other soil transmitted helminth infections are also reversible (Stephenson et al. 1989; 1990; 1993).

The recommended drugs are effective and inexpensive; the ones requiring a single administration are particularly convenient for community administration. These drugs have been through extensive safety testing and have been used in millions of individuals with only few and minor side effects.

**References**


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