

## LETTER TO THE EDITOR

### ANALOGIES IN MEDICINE: THE AMERICAN KILLER

Belo Horizonte, June 27, 2011

Dear Sir,

**The American Killer or Matador.** The word matador, meaning what or who causes death, also appears to mean, such as that which disturbs his fascination, for example: matador looking. It is also the toreador, especially in Spain, who kills the bull in bullfights, a type of spectacle in which bulls are tortured and plundered until they can be slaughtered by the blows of a sword. In Brazil, especially in soccer, the striker making goals is labeled as the killer or matador by sports chroniclers.

The hookworm disease in humans is caused by two parasites: the *Ancylostoma duodenale* and *Necator americanus* and they are widely distributed throughout the world, and are endemic in tropical and subtropical countries. The *Ancylostoma duodenale*, which produces about 20,000 eggs per day, is known as the Old World hookworm, mainly in Mediterranean countries, and others such as Iran, Pakistan, Japan and South America. The *Necator americanus* hookworm and the New World type that produces 10,000 eggs per day, is the most prevalent in tropical regions of the Americas, Central Africa and widely distributed in South Africa. The worms live in the small intestine. Slaves brought both worms to America.

The global statistics record that about ¼ of the population is affected by these parasites, with a higher incidence in underdeveloped countries, reflecting the low socio-economic conditions, poverty and malnutrition. According to the World Health Organization, there are 1.3 billion people infected with hookworm and 65 thousand die because of anemia associated with the disease. The most recent statistics indicate a reduction of infection from 576 million to 740 million individuals<sup>1</sup>. Brazil, due to its geographical position as a tropical country, with poor sanitary conditions of the population, presents high rates of hookworm in all regions, except in high altitude regions.

From the clinical point of view, you can find asymptomatic individuals or oligosymptomatic that have good nutritional status or serious situations that require hospital care. The adults have less severe symptoms than children. Patients complain of fatigue, adynamia, paleness, muscle pain and swelling. It also causes pica - perversion of appetite - with a desire to eat earth or clay (geophagy), coal and raw rice. In the most serious forms the paleness of the skin intensifies and the patient complains of effort dyspnea, dizziness and lipothymy. In severe chronic infections, especially in children, in addition to severe anemia, there may be involvement in the circulatory system, with symptoms that include dyspnea, tachycardia, palpitation, cardiac murmurs and anginal pain, reflecting myocardial anoxia. Other manifestations are generalized edema (anasarca), hypoproteinemia and cardiomegaly<sup>2</sup>.

The worm was described in 1902 by the zoologist and parasitologist Charles Wardell Stiles (1867-1941), after observing specimens from Texas<sup>4</sup>. He received the designation of *Necator americanus* (lat. necare, kill; necator: what or who kills, killer, murderer), that is the killer of America<sup>3</sup>. In the absence of extensive preventive measures, and despite current curative treatment, this small worm continues to justify its ominous forename.

José de Souza ANDRADE-FILHO  
Faculdade de Ciências Médicas de Minas Gerais  
Belo Horizonte, Minas Gerais, Brasil  
E-mail: labjsouzandrade@terra.com.br

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