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CASE REPORT

Mammomonogamus laryngeus: A HUMAN CASE REPORT IN FLORIANOPOLIS, SANTA CATARINA, BRAZIL

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ABSTRACT

Mammomonogamus laryngeus (sin.: *Syngamus laryngeus*) is a nematode which parasites the respiratory tract of some animals. It is occasionally seen in humans, who present symptoms similar to other diseases with respiratory manifestations, such as a chronic dry cough and chest pain, in addition to a "foreign body" sensation in the throat. It can be diagnosed through rhinolaryngoscopy or bronchoscopy examinations, but this often occurs only after spontaneous expectoration of the worms, a long period of symptomatology and the use of several types of medication. In this report, we describe a case of syngamosis in Florianópolis (Santa Catarina, Brazil). The patient consulted several health professionals during the course of the disease and was prescribed numerous drugs. Diagnosis was eventually reached after the spontaneous expectoration of a nematode couple.

KEY WORDS: respiratory tract parasitosis; chronic dry cough; *Mammomonogamus laryngeus*; human syngamosis.

INTRODUCTION

Mammomonogamus laryngeus (sin.: *Syngamus laryngeus*) is a nematode, which belongs to the superfamily Strongyloidea and the Syngamidae family. It is usually found in the respiratory tract of animals such as cattle, buffaloes and goats, and may occasionally be seen in humans (Lara et al., 1993; Dias et al., 1998; Acha & Szyfres, 2003; Limawongpranee et al., 2004; Castaño et al., 2006; Sossai et al., 2007). There are few reports of human syngamosis, records amount to about 100 cases. Most of these cases are related to visitors from the Caribbean islands such as Martinique, Dominica, Puerto Rico, Saint Lucia, Trinidad (Procop & Marty, 2008) and also South America, especially

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Brazil (Costa et al., 2005), where approximately 25 cases have been reported (Neves, 2011). *M. laryngeus* adult worms have a reddish or brownish red color due to hematophagy (Nosanchuk et al., 1995; Castaño et al., 2006; Sossai et al., 2007). Males and females live in permanent copulation, which gives the couple the characteristic "Y" shape (Castaño et al., 2006; Sossai et al., 2007; Pulcherio et al., 2013). The parasite life cycle includes the elimination of eggs into the soil by coughing or in stools, eggs are then swallowed by the host (Pulcherio et al., 2013). It is likely that infection in humans occurs through the ingestion of raw food and water contaminated with the parasite's eggs or larvae. It may also occur through ingestion of intermediate hosts who have, in turn ingested nematode eggs or larvae (Pontes et al., 1992; Acha & Szyfres, 2003; Castaño et al., 2006). Diagnosis is based on the verification and identification of males and females in copula, which gives them their "Y" shape (Pontes et al., 1992; Castaño et al., 2006). This is done by removal using forceps in the rhino-laryngological examination or bronchoscopy, however, the nematodes are commonly eliminated during a coughing paroxysm (Castaño et al., 2006; Neves, 2011; Pulcherio et al., 2013). Samples of sputum, tracheal secretions or feces may present parasite eggs (Pontes et al., 1992; Costa et al., 2005; Sossai et al., 2007). Here we describe a case of syngamosis in Florianópolis/SC/Brazil. This report came to our attention in 2014 and was analyzed with the consent of the patient.

CASE PRESENTATION

In June 2011, a 28 year old woman Animal Science student residing in Florianópolis (SC, Brazil), went to the Polydoro Ernani de São Thiago University Hospital with a dry cough. Following an examination, the physician prescribed loratadine syrup and ibuprofen. The biochemical profile and differential white blood cell count were normal (total cholesterol: 177 mg/dL; HDL: 55 mg/dL; LDL: 117 mg/dL; triglycerides: 92 mg/dL; glucose: 79 mg/dL; 5.410 leukocytes/μL: 2.737 neutrophils, 2.039 lymphocytes, 519 monocytes, 81 eosinophils, 32 basophils), as were the urine and stool examinations. Two months later, the patient developed a cough with mucus and had fever. After examination by a pneumologist, amoxicillin (500 mg) and paracetamol were prescribed. In the following days, the cough remained and ranged from dry to productive, the patient was self-medicated with cough and cold drugs. The cough was frequent and increased at bedtime, during the night and upon awakening. The patient continued to have coughing paroxysms and was directed to an Emergency Unit, where the intensive care physician prescribed clobutinol hydrochloride syrup. However, the cough remained and the patient still had a severe pain in the left side of her chest. She consulted another pneumologist, who performed an x-ray of the chest and sinus exams, diagnosing the patient with pneumonia. The physician prescribed levofloxacin (500 mg), acetylcysteine syrup and nebulization with ipratropium bromide and fenoterol hydrobromide for ten days.

Chest pain remained and a general practitioner prescribed nimesulide 100 mg for five days. Chest pain persisted for a few days, however, the cough remained constant in the upcoming months. Nine months after the patient was first seen at the hospital, she was seriously ill due to the cough paroxysms. There was a constant formation of mucus and a crawling or scratching sensation in her throat. Another pneumologist was consulted. Chest radiographs and sinus examinations did not show any abnormalities, except for the formation of mucus in the sinuses, therefore, levocetirizine and budesonide were prescribed. A few days later, the patient woke up coughing and expectorated a red blood colored, living Y-shaped worm (Figure 1A). The parasite was identified as a *Mammomonogamus laryngeus* couple by the Animal Parasitology Laboratory (Department of Animal Science and Rural Development) and the Laboratory of Parasitology (Department of Microbiology, Immunology and Parasitology) both at the Federal University of Santa Catarina (UFSC) (Figures 1B, 1C, 1D, 1E, 1F). After spontaneous elimination of the worms in copula, the cough symptoms subsided. Even so, the patient took the anthelmintic albendazole of her own accord.

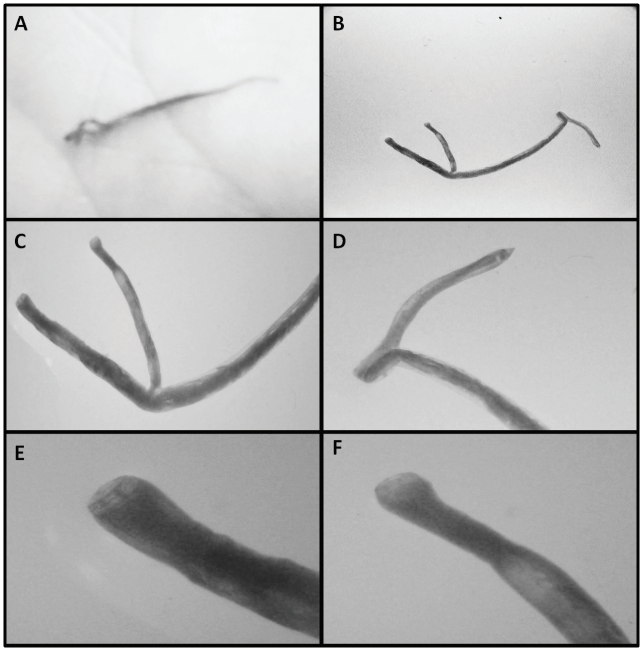

Figure 1. A couple of *Mammomonogamus laryngeus* expelled by the patient. (A) Red colored worms photographed by the patient after being expelled into her hand; (B) Y-shaped parasites photographed after preservation in water and alcohol; (C) Oral capsule observed in male and female worms. Magnification, X16. (D) Posterior extremity of the *M. laryngeus* female ending in a spear-shape; (E), (F) Anterior extremity view of *M. laryngeus* focusing on the oral capsule of the female (E, magnification, X48) and the male (F, magnification, X64).

DISCUSSION

The patient in this case is an Animal Science student and had been in constant interaction with cattle and goats. Thus, she may have ingested raw food or water contaminated with parasite embryonated eggs or larvae found in the environment. The worms eliminated by this patient were 20mm (female) and 5 mm (male). Usually, the adult male measures approximately 3 mm x 0.3 mm and the female about 10 mm x 0.5 mm, but they can reach 6 mm and 23 mm in length respectively (Pulcherio et al., 2013). The adult parasites live in the laryngotracheal region and bronchi of the definitive host (Castaño et al., 2006; Sossai et al., 2007). In humans, they can cause respiratory symptoms, the most striking of which are a predominantly nocturnal chronic dry cough and a "foreign body" sensation in the throat (Nosanchuk et al., 1995; Sossai et al., 2007; Pulcherio et al., 2013).

In this report, respiratory symptoms with a dry and persistent cough were similar to other cases (Eamsobhana et al., 2006; Sossai et al., 2007; Pulcherio et al., 2013). In addition to these symptoms, the patient had an episode of fever, a chest X-ray showed condensation of the alveoli and she was diagnosed with pneumonia, which is a more severe manifestation. Transient areas of consolidation in the lungs may be associated with the path the parasite travels through the host's lungs or the entry of worm eggs into this organ (Severo et al., 1998). Due to the symptoms being associated with several respiratory diseases, clinical diagnosis can be difficult. Parasitic infection is usually not the first suspicion and bronchoscopy or rhinolaryngoscopy, which are important tests in this case, are rarely applied. Thus, the patient often eliminates the worms spontaneously, as described in this case. As well as the endoscopic examination, which enables not only recognition but also removal of the worms, it is important to investigate the parasite eggs which can be found in the sputum, tracheal secretions and stools (Costa et al., 2005; Sossai et al., 2007). However, secretions are not commonly analyzed.

In this case, the stool test was performed but no parasitic forms were found, possibly since the *M. laryngeus* eggs were not swallowed. Samples of sputum or tracheal secretions were not taken. The blood count results were within normal limits. Importantly, eosinophilia, often reported in several parasitoses, is a small finding in human syngamosis (Nosanchuk et al. 1995; Kim et al., 1998; Sossai et al., 2007) and is only described in a few cases (Severo et al., 1998; Limawongpranee et al. 2004).

After removal of the worms, symptoms disappear spontaneously but anthelmintics are prescribed in some cases, especially mebendazole, thiabendazole and diethylcarbamazine (Pontes et al., 1992). The patient in this case took the anthelmintic albendazole of her own accord, after spontaneously eliminating the worms. Before the parasitic infection is correctly diagnosed, patients often consult many health care professionals and are prescribed

several different drugs. Therefore, patients receive many different diagnoses due to lack of information regarding this parasitic infection and because the symptoms are common in other respiratory diseases. In addition, diagnostic delay leads to the worsening of symptoms and patients can often be seriously disturbed by the coughing paroxysms.

There are only a few cases of reported human syngamosis, however, as many infected patients eliminate the worms spontaneously and considering patients may not seek medical attention, there may be a much larger number of people with this parasite. Syngamosis is a parasitic disease and its symptoms are common in a variety of respiratory illnesses. A chronic dry cough is frequent, but it is usually not detected by clinicians, resulting in the worsening of the patient's condition by delays in correctly diagnosing the disease. Therefore, it is important to carry out an endoscopic examination of the respiratory tract in cases where there is a chronic dry cough from an unknown source.

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