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Lagochilascariasis: case report

Lagoquilascaríase: relato de caso

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ABSTRACT

An unusual case of parasitism by *Lagochilascaris minor* infection is reported in a 38-year-old woman from Paraupebas, Pará, Brazil. The article summarizes the main characteristics of the disease and its etiological agent, including prevalence, life cycle, clinical course and treatment.

Key words: lagochilascariasis; helminthiasis; parasites; pathology.

INTRODUCTION

Lagochilascariasis is a zoonosis caused by ascaris nematodes of the genus *Lagochilascaris*. It has five species, including *Lagochilascaris minor*, which is the only one that causes disease in humans[1, 2]. This worm is exclusively neotropical, and Brazil leads the world's casuistry, with the highest number of cases in the state of Pará[3].

Leiper reported in 1909 for the first time the nematode *L. minor* when examining a sample of human origin from Trinidad[4]. In his description he calls attention to the cephalic end of helminths, which presents a mouth with three well developed lips, separated by interludes[5]. Adult worms measure about 5 to 20 mm and have a white-milky color. Their eggs measure 65 to 85 µm in the largest diameter and have a thick shell, with a coarsely pitted surface containing multiple excavations in "piece meal"[3].

Artigas *et al*. described the first case in Brazil in 1968[6] in a 16-year-old female patient from Piracicaba, São Paulo, who had always lived in that state. In 2002, there were 88 cases described in Brazil, 61,3% of them at Para's state[3].

CASE REPORT

In 2015 a 38-year-old female patient, born in Paraupebas, Pará, Brazil, noticed a painless and slow growing mass of the right cervical region. She presented with fever, phlogistic signs and purulent drainage in the neck, without dysphagia or dyspnea. She sought medical assistance in Belo Horizonte, where she underwent a tonsillectomy and lymphadenectomy.

Anatomopathological examination showed cervical lymph nodes containing cylindrical and white worms measuring on average 1.5 cm in length and 0.1 cm in diameter (**Figure 1**), which were also present in the tonsil. In histology, there were numerous adult worms with lateral alae and oval-shaped eggs with irregular membrane with a "soda cap" appearance. There were also larvae at various stages of development that were associated with the granulomatous reaction and microabscesses (**Figure 2**). The morphology of adult worms and eggs led to the diagnosis of lymph node and tonsil lagochilascariasis, a rare parasitism that can be life threatening.

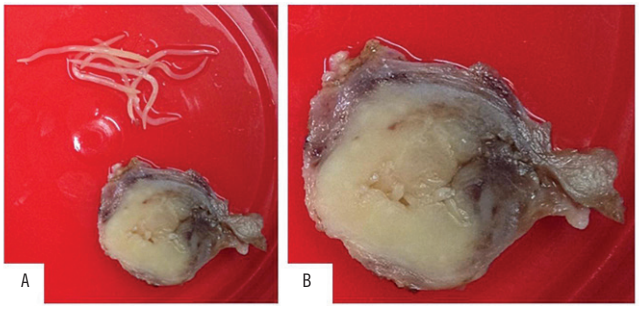

FIGURE 1 – *Cervical lymph nodes and adult worms*

A) cervical lymph node containing cylindrical worms measuring on average 1.5 cm in length each; B) detail of the lymph node containing the worms.

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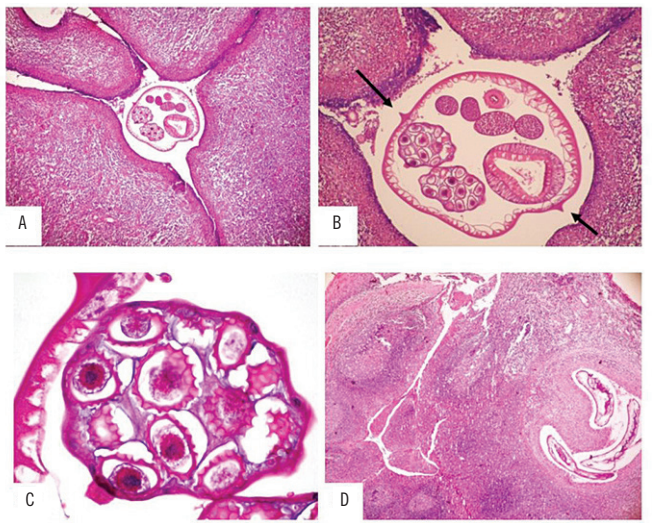

FIGURE 2 – *Histological sections of the lymph node and the tonsil*

A) adult worm inside the lymph node (HE, 40×); B) detail of adult worm inside the lymph node, showing the lateral alae (arrow) (HE, 100×); C) note a detail of the Lagochilascaris *eggs with "soda cap" appearance (HE, 400×); D) adult worms in the tonsil (HE, 40×).*

HE: hematoxylin and eosin.

DISCUSSION

Lagochilascariasis is a parasitosis that is not well known in our country, and the majority of cases are described in the state of Pará, an endemic region of the disease.

According to the existing literature and with experimental cycles, the definitive hosts of this worm would be the felids. They would harbor the adult phase of the parasite in their digestive or respiratory system, where oviposition would occur. The eggs would be eliminated by the feces of these natural hosts, contaminating the soil. Rodents, intermediate hosts, become infected by the ingestion of the embryonated form of these eggs, which become larval form, forming cysts in the muscles of these animals. The cycle closes as the definitive hosts feed on contaminated rodents[3, 6, 7] (**Figure 3**). Human appears to be an accidental host, consuming raw or unhealthy meat from infected wild animals (agouti, tapir, capybara etc.)[3]. The patient, who lived in the area where most cases are recorded in the world, confirmed the ingestion of this type of meat.

There are still doubts about how to explain the preferential location of lesions in humans. The most accepted theory is that the encysted larvae ingested in the raw meat would leave the cysts in the stomach lumen and migrate later through the esophagus to the structures of the neck by a mechanism not clarified yet[8].

Infection in humans causes suppurative tumor lesions in the neck, the mastoid region and the middle ear, and may also affect the lungs and the central nervous system. In these last two places, the disease is serious and potentially life threatening. Cases have also been reported in the paranasal sinuses, dental alveolus, eyeball, temporoparietal-occipital, and sacral region[9]. Finding worms in the suppurative lesions is common, a fact not observed in this patient, which made diagnosis difficult.

The pathological process is characterized by a foreign body type granulomatous reaction (**Figure 4**). There are also abscesses interconnected by fistulous routes with granulation tissue. Multinucleated giant cells and fibrosis are associated[3, 8].

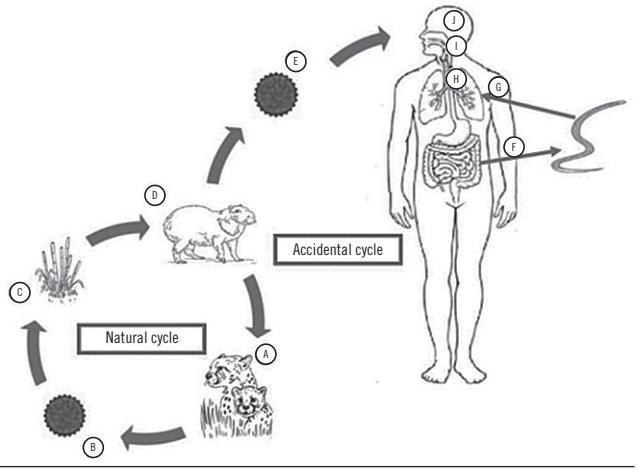

FIGURE 3 – *Possible biological cycle of* Lagochilascaris minor

(A) the infected definitive host (feline) releases worm's eggs (B) which contaminate the soil (C). The intermediate host (D) feeds on contaminated plants and becomes infected. The human enters as an accidental host by ingesting bush meat contaminated with the embryonated eggs of the parasite (E). The passage of the worm through the digestive tract (F) leads to its evolution, followed by a possible pulmonary cycle (G), in which Lagochilascaris *ascends through the respiratory tract, migrating toward neighboring regions (H), such as lymph nodes (I) and the central nervous system (J).*

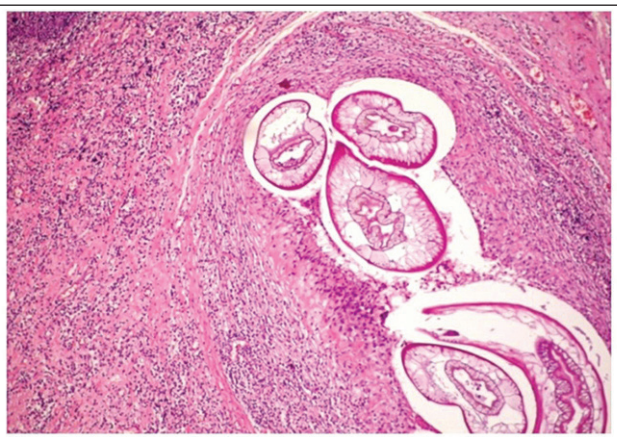

FIGURE 4 – *Granulomatous reaction around adult worms (HE, 100×)*

HE: hematoxylin and eosin.

During this inflammatory process, adult worms with lateral alae and oval-shaped eggs with irregular membrane with a "soda cap" appearance and larvae in several stages are observed.

Clinical diagnosis is rarely performed in the early stages of the disease, as infected individuals seek medical assistance only in the advanced stages. The parasitological diagnosis is based on the discovery of the parasite, obtained from the lesion. There is a similarity between the eggs of *L. minor* and *Ascaris lumbricoides*, a fact that requires attention to differentiate them (**Figure 5**). The Complete Blood Count (CBC) is of small value and may show leukocytosis or leukopenia, presence or absence of eosinophilia[3,8].

The disease has a chronic evolution, with phases of recovery and relapses. There are evidence of autoinfection in humans, since all the evolutionary phases of the worm can be found inside the lesions simultaneously[3].

The severity of the infection depends on the location of the lesion, the ability to reproduce and the incursion of the parasite into the tissues and the immune response of the host[10].

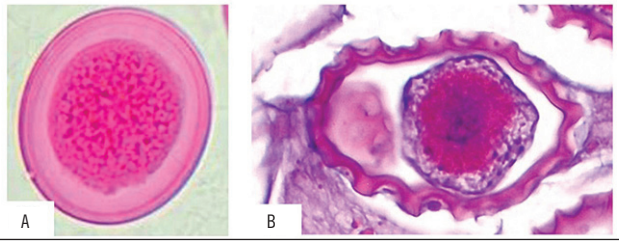

FIGURE 5 – *Comparison between eggs of* Ascaris lumbricoides *and* Lagochilascaris minor

A) the A. lumbricoides *egg membrane is regular; B) the* L. minor *egg membrane is dentate, with "soda cap" appearance.*

The ideal treatment would be an effective drug against eggs, larvae and adult worms and that could also prevent the embryogenesis of the egg. Thiabendazole and levamisole are potent drugs against adult worms and probably effective against larvae as well, however, both drugs are ineffective against eggs. Consequently, eggs may continue to develop and ultimately lead to larval incubation, giving rise to new adult worms and causing new lesions. Prolonged use of anthelmintics associated with surgical management is then advocated. It can be started with thiabendazole, followed by diethylcarbamazine or mebendazole, and finally levamisole. The surgical removal combined with drug usage presents better results[3, 4, 8, 11].

Relapses are frequent, since the medication can not eliminate all the evolutionary phases present in the lesions, so that autoinfection occurs[4]. The patient was treated with anthelmintics, but she was not able to tell which drug and, until now, she is well with no relapses. No other family members presented similar symptoms.

The best way of combating disease is prevention. Therefore, meat from wild animals, especially rodents, should be cooked at 100°C for 10 minutes or frozen at -20°C for 15 days before being prepared for human consumption[4].

CONCLUSION

The correct diagnosis of lagochilascariasis is essential to differentiate it from other diseases, leading to the appropriate and early treatment, avoiding the appearance of the severe forms that affect lungs and the central nervous system.

RESUMO

Relata-se um caso de infecção por Lagochilascaris minor*, parasitose incomum, em mulher de 38 anos de idade, procedente de Paraupebas, Pará, Brasil. O artigo resume as principais características da doença e de seu agente etiológico, incluindo prevalência, ciclo de vida, curso clínico e tratamento.*

Unitermos: *lagoquilascaríase; helmintíase; parasitos; patologia.*

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