

Balantidium coli (Malmstein, 1857) in Zulia State, Venezuela

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Abstract

Balantidium coli is the only pathogenic ciliate of medical importance in man. It is practically innocuous to the pig, which is its normal host; while it becomes pathogenic for the human host, causing ulcerative invasion of the colon wall and causing severe dysentery. Here are reported several cases of balantidiasis detected in indigenous communities of Zulia state, Venezuela. As a common characteristic of the described cases here, it is observed that those affected by the infection were children, with heterogeneous stool samples. The evolutionary form detected was in all cases trophozoites and some cysts. Although no survey was conducted, it was notable the existence of pets and contact with pigs in affected individuals. All the individuals were indigenous, with poor hygienic conditions, previous reports agree on this assessment. It is remarkable the fact that, *B. coli* has been present in the indigenous communities of Zulia state for a long time. This situation favors the realization of studies directed to the parasite in these communities of risk and thus to know the real prevalence of this ciliate.

Keywords: *Balantidium coli*; Child; Indigenous; Fecal Sample

Introduction

Balantidium coli [1] is the only pathogenic ciliate of medical importance in man. This protozoan is large, its trophozoites measuring between 80 and 100µ, have a pear-shaped appearance and are easily distinguished by the presence of pulsatile vacuoles that impede rapid movement of the parasite. In addition, a voluminous reniform macronucleus and a small vesicular micronucleus, housed in the notch of the first one, stand out in its cytoplasm. It is practically innocuous to the pig, which is its normal host; while it becomes pathogenic for the human host, causing ulcerative invasion of the colon wall and causing severe dysentery [2].

Regarding the pathogenicity of the protozoan, although it is an invasive microorganism, it is considered that it requires the coexistence of a pathogenic or potentially pathogenic bacterial flora, as a factor that can influence the susceptibility of the individual and the course of the infection [3-5]. According to Walker [6], *Balantidium* does not cause discomfort in 80% of the cases, in others it produces ulcerative colitis that clinically and anatomopathologically only differs from amoebic colitis due to the demonstration of the parasite [7,8]. However, postmortem cases of balantidian hepatic abscess have been described [9], as well as colonic perforation due to *B. coli*, as in the case of an indigenous man of 25 years of age, who dies of this infection [10]. Dorfman, *et al.* [11] in 1984, describe another fatal case, where perfora-

tion of the appendix occurred causing a peritonitis, and in addition the presence of parasites was demonstrated around the blood vessels of the lung.

Although balantidiosis has a worldwide distribution, it is considered a rare infection in humans, the prevalence of this parasite in Latin America ranges from 0.5 to 9.1% [12]. Some cases of Balantidiasis detected in communities of the state of Zulia, Venezuela, where the finding of this parasite was performed accidentally [13-15] are described. In Venezuela there are few studies directed towards this parasitosis, however, many of them have been detected in indigenous communities [13,16-18].

Materials and Methods

The results obtained in relation to *B. coli* infection are presented, after several years of study of intestinal parasitosis in several communities of the Zulia state, these studies involved the examination of a stool sample by individual, through direct microscopic examination and the formol-ether concentration method.

Results and Discussion

As can be seen in table 1, a common macroscopic feature was the heterogeneous aspect of the sample (3/5), which can be attributed not only to *B. coli*, but also to other enteroparasites, since these children were generally infected by more than two parasitic species.

Characteristics	Case 1	Case 2	Case 3	Case 4	Case 5
Year of study	2006	2010	2014	2014	2015
Indigenous community	Japrería	Toromo	Saimadoyi	Saimadoyi	Aroy
Age	5 years	3 years	8 years	10 years	8 years
Gender	Male	Female	Male	Male	Female
Evolutionary forms	Trophozoite	Trophozoite and Cyst	Trophozoite	Trophozoite and Cyst	Trophozoite
Parasitic associations	--	<i>Trichuris trichiura</i> , <i>Pentatrichomonas hominis</i> , <i>Chilomastix mesnili</i> , <i>Entamoeba coli</i> , <i>Cryptosporidium sp.</i> , <i>C. cayetanensis</i>	<i>Ascaris lumbricoides</i> , <i>Trichuris trichiura</i> , <i>Hymenolepis nana</i> .	<i>Trichuris trichiura</i> , <i>Entamoeba complex</i> , <i>Endolimax nana</i> , <i>Blastocystis sp.</i>	<i>Entamoeba complex</i> , <i>Entamoeba coli</i> , <i>Pentatrichomonas hominis</i> , <i>Endolimax nana</i> , <i>Chilomastix mesnili</i> , Hookworms
Macroscopic characteristics	--	Liquid Heterogeneous	Pasty Heterogeneous and mucus	Soft Heterogeneous	Shaped Heterogeneous

Table 1: Cases of balantidiasis in the state of Zulia, Venezuela.

In relation to the evolutionary forms of the parasite, the predominance of trophozoites (5/5) over cysts (2/5) in most of the observed samples is noteworthy. Unlike other human intestinal protozoa, where the form that prevails in coproparasitological examinations, are cysts.

According to Esteban., *et al.* [19] the detection of positive cases of human Balantidiasis does not reveal a significant association of susceptibility by age and sex, which indicates that every individual is exposed to the infection in the presence of a highly contaminated environment. However, we can note that most of the cases reported in the literature and particularly in this report, were detected in children.

Regarding *B. coli*, this ciliate is found occasionally and its presence is associated with the possession of domestic animals, such as pigs and monkeys [20,21]. Lemus., *et al.* [22] detected two cases in eastern Venezuela, whose inhabitants usually devote part of their activity to raising pigs, and it can be assumed that the origin of the infection by the protozoan has its niche in this animal.

In Zulia State, Chacín-Bonilla and Sánchez-Chávez [17] have reported cases of human balantidiasis in two Barí indigenous communities: Campo Rosario and Saimadoyi, with a prevalence of 0.8 and 1% respectively. We can see that despite the time elapsed, the epidemiological conditions in these ethnic groups have not changed, so this zoonosis is maintained in the children of these communities, since two of the patients cited here came from Saimadoyi. On the other hand, Cheng-Ng., *et al.* [18] described a case of Balantidiasis in an 11-year-old Yucpa indigenous girl with diarrhea, from the Maraca community, Sierra de Perijá, Zulia state.

Recently, a diphasic tube technique (TDT) has been described, especially indicated for the diagnosis of *S. stercoralis*, where it was also possible to recover *B. coli* trophozoites [15]; however, a study aimed at the evaluation of said method as a specific technique for the detection of *B. coli* is required to establish definitive conclusions.

There are factors that favor the transmission of balantidiosis in humans, among which are: close contact between pigs and humans, inadequate disposal of feces, contamination of drinking water sources and vegetable crops with human and animal feces, as well as climatic conditions in tropical and subtropical regions [3,4,23,24]. In the communities where *B. coli* was detected, they usually live with animals in the home, including pigs; so the probable source of infection of these children is evident.

Conclusion

It is remarkable the fact that, *B. coli* has been present in the indigenous communities of Zulia state for a long time. This situation favors the realization of studies directed to the parasite in these communities of risk and thus to know the real prevalence of this ciliate.

Conflict of Interest

None.

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