

An Unexpected Guest in Capsule Endoscopy: Tapeworm Infection

Marta Freitas^{a, b, c} Vítor Macedo Silva^{a, b, c} Pedro Boal Carvalho^{a, b, c}
Bruno Rosa^{a, b, c} José Cotter^{a, b, c}

^aGastroenterology Department, Hospital da Senhora da Oliveira, Guimarães, Portugal; ^bLife and Health Sciences Research Institute (ICVS), School of Medicine, University of Minho, Braga, Portugal; ^cICVS/3B's, PT Government Associate Laboratory, Braga/Guimarães, Portugal

Keywords

Capsule endoscopy · Tapeworm infection · Taeniasis

Um achado inesperado na enteroscopia por cápsula: infecção por ténia

Palavras Chave

Enteroscopia por cápsula · Infecção por ténia · Teníase

Taeniasis is a parasitic infection caused by tapeworm species (*Taenia saginata*, *Taenia solium*, and *Taenia asiatica*), affecting about 50 million people globally. It occurs mainly in developing countries, by consumption of undercooked infected meat [1]. Its diagnosis is challenging as most patients remain asymptomatic or have mild nonspecific symptoms [2, 3]. Although microscopic stool examination remains the gold standard for its diagnosis, it has a low diagnostic yield [4]. Small bowel capsule endoscopy (SBCE) is an essential diagnostic tool for small intestine diseases. SBCE may help in stool-negative tapeworm infection cases, allowing a definitive diagnosis [3, 5].

We report a case of an 18-year-old young female patient, from a developed country, living in an urban area

with sanitary conditions, with no past medical history and chronic medication, that was referenced to gastroenterology consultation for bloating, abdominal pain, and intermittent white cords in her stools during approximately 6 months, not seen by physicians. The patient did not report a previous consumption of undercooked meat and has no recent out-of-country travel. There were no relevant findings in the physical examination or the biochemical analysis. The microbiological stool examination, collected on three different days, was negative. Upper and lower gastrointestinal endoscopy had no relevant findings. Therefore, an SBCE was performed. Throughout the small intestine, a continuous segment of white, flat, and segmented structures (proglottids) without mucosal lesions were observed, compatible with intestinal tapeworm infection (shown in Fig. 1). The patient was treated with a single dose of praziquantel 10 mg/kg with full clinical resolution and was advised to properly cook meat. We performed additional stool testing 4 months after the treatment, and it was negative. Currently, with approximately 2 years of follow-up, the patient remains asymptomatic, without reporting white cords (proglottids) in her stools.

We emphasize that, although SBCE allows direct visualization of the tapeworm, and it was decisive for estab-

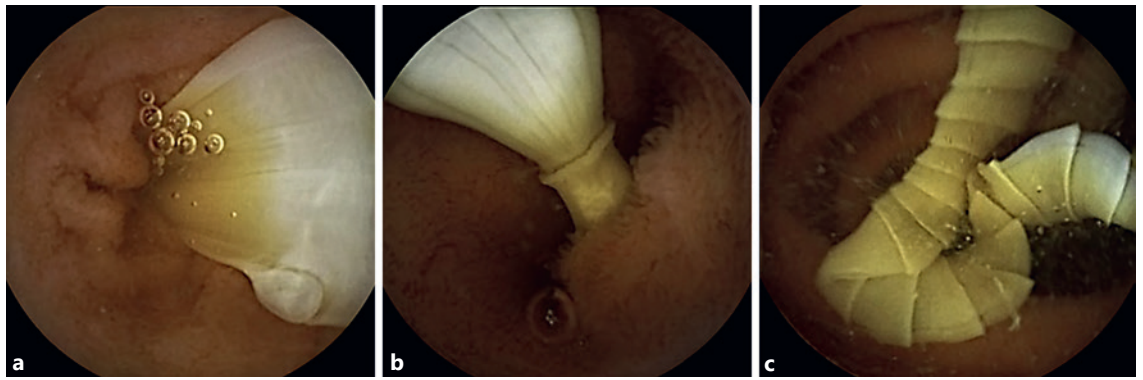


Fig. 1. SBCE findings. **a–c** Tapeworm in the small bowel. **c** A continuous segment of white, flat, and segmented structures without mucosal lesions.

lishing the diagnosis in this case, it has the drawback of not giving information of the type of *Taenia* species. This information is important in cases of *Taenia solium* infection, given the potential risk of neurocysticercosis. Nevertheless, this case illustrates a very rare diagnosis in developed countries, highlights the diagnostic challenges of some cases of tapeworm infection, and reveals that SBCE may play a crucial role in the diagnosis of taeniasis in suspected cases with negative microscopic stool examination and nonspecific symptoms.

Statement of Ethics

The patient received the current standard of care, without experimental intervention. All of the collected images and data were anonymized. All of the methods were performed in accordance with relevant guidelines and regulations, i.e., the ethical guidelines of the 1975 Declaration of Helsinki. The study was approved by an appropriate institution (the Ethical Committee of Gastroenterology of Hospital Senhora da Oliveira, Guimarães). Informed consent was obtained from the patient to perform capsule endoscopy and for publication of the details of their medical case and any accompanying images.

References

- 1 Griffiths J, Maguire JH, Heggenhougen K, Quah SR. *Public health and infectious diseases*. Elsevier; 2010. p. 216.
- 2 López-Caleya JF, Contreras SN, Martín-Rodrigo L. *Taenia saginata*: an imported case. *Rev Esp Enferm Dig*. 2015;107(7):440–1.
- 3 Ucar LA, González AE, Sainz IF. Capsule endoscopy, a useful tool for the diagnosis of a tapeworm infection. *Rev Esp Enferm Dig*. 2020;112(1):71–2.
- 4 Okello AL, Thomas LF. Human taeniasis: current insights into prevention and management strategies in endemic countries. *Risk Manag Healthc Policy*. 2017;10:107–16.
- 5 Pezzoli A, Fusetti N, Pizzo E. Capsule endoscopy diagnosis of intestinal *Taenia*. *Gastrointest Endosc*. 2016;83(1):261–2.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Funding Sources

There are no funding sources to declare.

Author Contributions

Marta Freitas did the literature research and drafted the manuscript. Vítor Macedo Silva, Pedro Boal Carvalho, and Bruno Rosa performed the capsule endoscopy, read and critically revised the manuscript. José Cotter critically revised the manuscript and approved the final version to be submitted.

Data Availability Statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.