

## A COLOMBIAN CASE OF INFECTION WITH *PARACAPILLARIA PHILIPPINENSIS* (SYN. *CAPILLARIA PHILIPPINENSIS*), IN SPAIN?

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Dear Editor,

The infection with *Paracapillaria philippinensis* (syn. *Capillaria philippinensis*), was recorded at the first time in fecal samples from a Philippine patient in 1963. The disease is clinically characterized as a progressive enteric illness with massive loss of proteins and a malabsorption syndrome that can lead to death. The infection is acquired by ingestion of raw fish, and is an endemic disease in Philippines, Thailand, India, Egypt, Japan, Korea, and China Taipei. Some isolated cases have been notified in Laos, India, Indonesia and Iran [1-3]. The laboratory diagnosis is confirmed by the presence of eggs with shapes and sizes coinciding with *P. philippinensis* [3].

More than twenty years ago a rare case of human intestinal capillariasis was reported in a young Colombian man who arrived to Madrid as a cocaine dealer [4]. He presented with abdominal pain and mild, self-limited diarrhea after a surgical intervention. *Capillaria* ova were observed in the stools and treatment with mebendazole (200 mg/d for 3 weeks) resulted in apparent clinical and parasitological cure. *Capillaria* eggs were visualized in the feces with an average size of 65 X 26 µm [4], these sizes eggs were higher than the range described for this species of capillariidae. According to original description, the eggs of *P. philippinensis* measure 36-45 µm of large by 21 µm of wide [5], while in the last re-description of the nematode, eggs measured 42-48 µm of large by 18-24 µm of wide [6].

There can be no doubt that sizes of eggs from original descriptions were shorter than measured eggs from the Colombian case. In addition, the authors did not take into account the possibility of a spurious parasitic infection with *Calodium hepaticum* (syn. *Capillaria hepatica*). The false infection occurs following the ingestion of unembryonated eggs that pass through the digestive tract and are eliminated in the faeces. In fact, the size of eggs described in the Colombian patient were similar to sizes of eggs described for *C. hepaticum* and human spurious infection with this nematode, which has been described in the American continent [7-9].

After that publication, Colombia has been cited as a country where may occur transmission of intestinal capillariasis. This mistake, have been dragged during little more than twenty years by some journal and famous books as The Control of Communicable Diseases Manual (CCDM) [3], which is one of the most widely recognized reference volumes on the topic of infectious diseases. Therefore, it would be necessary to clarify this error for future editions of books and scientific papers.

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## Referee comments

Dronda et al. (1993) reported a case of human intestinal capillariasis in a Colombian traveller after the finding of capillarine eggs in his faeces.

The authors considered the following points in the diagnosis, which strongly support the determination of the intestinal nematode *Capillaria philippinensis* as the cause of this parasitosis:

- the morphological characteristics of these eggs, with the exception of their size (“the fact that they are somewhat larger than has typically been reported may well be to biological variance”);
- the presence of unembryonated as well as embryonated eggs in faeces (“*C. philippinensis* is the only capillarid known to date of which one may find unembryonated and embryonated eggs in fresh stool”);
- and the intestinal symptomatology (“the clinical signs and symptoms observed in our case were those described for intestinal capillariasis” “Increased awareness, earlier diagnosis, and a previous healthy status can explain the shorter evolution and milder symptoms in our patient”);

However, the same authors underlined that:

- Colombia was not recognised as an intestinal capillariasis endemic area;
- the route of infection remained unclear because raw or undercooked fish had not been included among recent or usual meals of the patient.

Consequently, the authors did not rule out another capillarine species, maybe still unknown as a human parasite, as the cause of this intestinal parasitosis (“The parasite identified in feces from our patient is most likely *C. philippinensis*, acquired in Colombia, although with the current data, *C. plica* or a not as yet described new species cannot be excluded”), and they conclude: “The clinical case presented here is more valuable for generating hypotheses than for arriving at definitive conclusions”.

On the other hand, the author of the article submitted to *Parasitaria* proposes that this intestinal capillariasis case really was a spurious parasitic infection due to *Calodium hepaticum*. However, to accept this hypothesis, it has been assumed that *C. hepaticum* eggs remained in the intestine of the patient for at least 10 days, after the ingestion of contaminated water, vegetables or infected liver in Colombia. Moreover, the presence of embryonated eggs containing a larva cannot be explained, because *C. hepaticum* needs to return to the environment to become embryonated and infective.

Journals and articles refer to Colombia as a country where intestinal capillariasis transmission may occur, according to Dronda et al. (1993), but if the potential readers interested in this possibility read this article, they will understand that the authors hypothesize about *C. philippinensis* transmission as the real cause of this case of human intestinal capillariasis.

In my opinion, there is no parasitological mistake in the article published by Dronda et al. (1993).

## Author's reply to the referee comments

Dear Editor,

Taking into account the interesting comments and useful opinions of the previous peer reviewer, I would like to clarify that the morphological characteristics of these eggs diagnosed from a Colombian traveler [1] may support only that they were from Capillariidae family. In relationship with taxonomic descriptions of *Paracapillaria philippinensis* from Chitwood [2] and Moravec [3], the large of eggs from Colombian patient (65 µm) exceed the maximum limit of length range in 20 and 17 µm, respectively. More recently, during one study about ultrastructure of eggs of *P. philippinensis*, the authors measured 26 intact eggs using ocular micrometer by light microscopy, and they determined that the mean (±SD) of the length of the eggs was 41.84 (±1.75) [4]. The mean length of eggs from Colombian case was over 23 standard deviations larger than the mean of eggs from this last study. All these variations in egg sizes in only one host (*Homo sapiens*) may do not be explained by biological variations.

Spurious infections with *C. hepaticum* are associated with the consumption of infected liver of animals or soil, where noninfective, unembryonated eggs are ingested and could be found in stools [5]. No data were presented regarding the hygienic and environmental conditions relating to this patient, so it is difficult to ascertain the way and the time of infection, but the possibility that the infection have been acquired in Spain cannot be discarded. It is possible that the patient was infected through foods contaminated by rat stools containing undeveloped or partial embryonated eggs of *C. hepaticum*. Similar eggs from other *Calodium* species have been recovered from wild animals throughout the world [5].

It is necessary to realize that the patient was a cocaine dealer, “he tried to defecate for different, unsuccessful ways (drinking soapy water, oil enemas, etc.)”. Some of these food or drinks used in vain to defecate could be contaminated with *C. hepaticum* or other Capillariidae eggs, some of them embryonated and other unembryonated. The embryonation of nematode eggs is affected by various environmental conditions and shows species-specific characteristics and specific requirements [6]. In my knowledge, the embryonation rates and their subsequent infectivity in various hosts have not been evaluated for *C. hepaticum* so far. However, embryonation and survival of *C. hepatica* eggs have been assessed in the laboratory for three types of soils and the authors found that eggs were able to embryonate, and embryonated eggs survived for 30 days, in each type of soil across the ranges of temperature and moisture content [7].

*Calodium hepaticum* represents the most common nematode parasite of the liver of house rats in Colombia [8] and in Europe [9]. In fact, in Spain the infection have been confirmed in various species of murid rodents [9], and other non-Muroidean mammals [10].

The occurrence of the intestinal symptomatology and diarrhea in this patient could be attributed to other causes. Spurious infections with *C. hepaticum* may lead to mild diarrhea, although this type of infection appeared to be asymptomatic in most cases [11]. The concomitant presence of other potential parasitic agents could explain the clinical picture and good response to mebendazole. The authors described that hookworm infections were diagnosed on two different occasions, and both hookworm species (*Ancylostoma duodenale* or *Necator americanus*) may cause acute or chronic diarrhea in adult patients and in travelers

[12-14]. Moreover, we cannot discard the possibility that some substances ingested by the patient to eliminate cocaine balls were contaminated with *C. hepaticum* eggs, among them liver extracts. Other, as laxatives may have been used to allow the intestinal transit and the elimination in stools of cocaine balls and these remainders could contribute to the mechanisms of diarrhea.

Colombia was not recognized as an intestinal capillariosis endemic area before the publication of this Colombian case. Clearly, they proposed at the end of introduction section and in the first paragraph of discussion that Colombia should be included as a new possible geographical localization for this human intestinal infection.

Certainly, the authors explained in the discussion section that: "The clinical case presented here is more valuable for generating hypotheses than for arriving at definitive conclusions". That position of hypothesis was not well established in the title neither in the abstract of the paper, two important parts of the manuscript used for the most important data bases as PubMed/Medline. Although, in my opinion, the term "intestinal capillariosis" was not adequately used because of this expression is reserved only for intestinal infections with nematode *P. philippinensis* in humans, and this parasitic infection was not definitively diagnosed in this patient.

The size of helminth eggs is a key diagnostic feature for parasitological diagnosis [15]. Capillariidae eggs found in stool samples did not confirm the diagnosis of *P. philippinensis*. This erroneous diagnosis should be absolutely excluded, and in my opinion this was the main mistake of the article.

As in the previous case, we only may provide some hypothetical considerations; we cannot arrive to final conclusions about the accurate source of this parasitic or spurious human infection. From the viewpoint of taxonomy and systematics, nematodes of the family Capillariidae represent one of the most difficult groups of helminths [16]. Currently, the electronic microscopy (6) and molecular techniques [17] may be used to elucidate taxonomic positions. At the time that this article was published these techniques were not broadly used; nevertheless, nowadays some of these tools may be applied to clarify some difficult diagnosis like this interesting case.

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