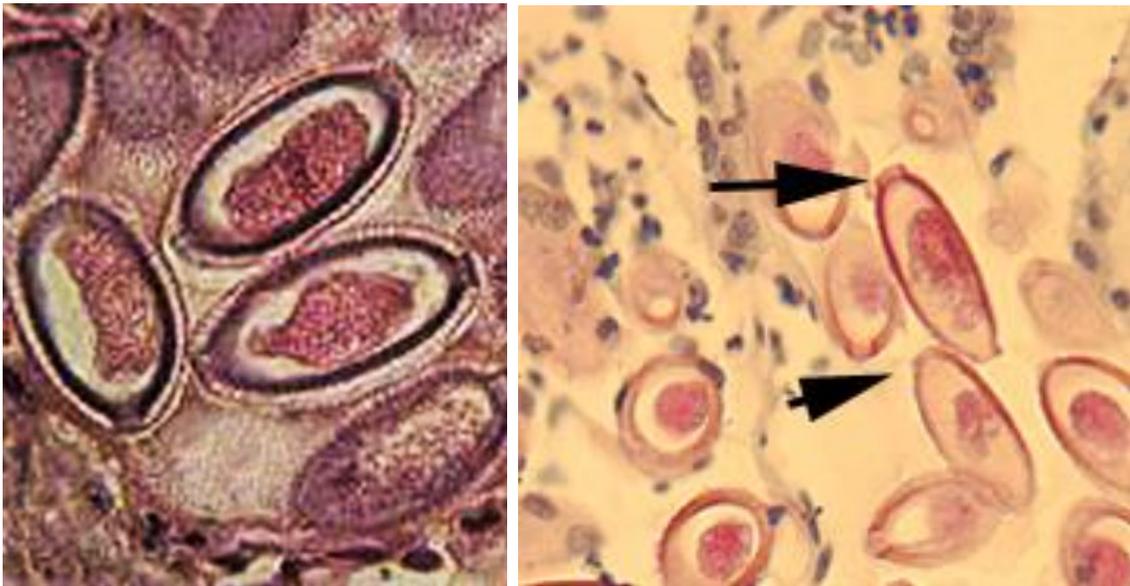


PARASITOLOGY CASE HISTORY 4 (HISTOLOGY)

(Lynne S. Garcia)

A 58-year-old male presented with symptoms that were consistent with a heart attack. Unfortunately, the patient expired the following day. Patient history included high blood pressure, high cholesterol, and complaints of abdominal pain, intermittent diarrhea, weight loss, frequent headaches and shortness of breath for the previous 6 months. He had just returned from the Philippines where he had been working for approximately one year. Autopsy findings included the following images (routine H&E) (intestinal tissue).



- Although not the cause of death, what is the diagnosis of these incidental findings?

Scroll Down for Answer and Discussion

Answer and Discussion of Histology Quiz #4

This case demonstrated the incidental finding of eggs of *Capillaria* spp. in the intestinal tissue. Diagnostic features include:

- thick-shelled eggs with prominent polar plugs, which is consistent with *Capillaria* spp. (see arrows above)
- unembryonated eggs.

Simple wet mount examination of stool sample and identification of ova, larvae and adult worm in the stool sample can clinch the diagnosis. But ova of *Capillaria philippinensis* need to be differentiated from those of *Trichuris trichiura*. Eggs of *Trichuris trichiura* also have prominent polar plugs, however the polar plugs of some *Capillaria* spp. tend to be flattened giving the eggs a more quadrate form; this can be seen in some of the eggs. The shells of the *Capillaria* spp. eggs are also striated (see left below). The patient's travel history was also consistent with acquiring capillariasis, although it would not be a factor that would allow trichuriasis to be ruled out since this disease is found worldwide.



Capillaria spp.



Trichuris trichiura

Intestinal capillariasis is an infestation of humans caused by the nematode *Capillaria philippinensis*. The first case was reported in 1963 in Philippines, and more than 1,000 patients acquired the illness with over 100 deaths between 1967 and 1969. Thailand is also an endemic area of intestinal capillariasis with the first case being reported in 1973. After that, many case reports and case series were published in the literature from different parts of the country; the largest was 100 cases from Sisaket province in 1983. Patients mainly present with chronic diarrhea and severe malabsorption. The diagnosis traditionally is made by discovering the parasitic

larvae or eggs in the stool. In a true human infection, no eggs are found in the stool. Diagnosis requires histologic examination. In endemic area, intestinal capillariasis should be considered if patients develop chronic watery diarrhea accompanied by significant weight loss and severe hypoalbuminemia.

Capillaria philippinensis is transmitted to humans by their consumption of raw fresh-water or brackish water fish containing its larvae. In the Philippines, the traditional dish "Kilawin", which is raw fish soaked in vinegar, is the main source of infection. Therefore, in this study, it affected people in rural areas of Thailand, who habitually eat raw fresh-water fish more than people in urban areas. However, nearly 30% of the patients had been living in an urban area for more than 5 years before diagnosis. This might be attributable to the increasing rate of immigration from rural to urban areas in Thailand. History of eating raw fresh-water fish was important because about 90% of patients have this history. Nonetheless, it is not necessary to be present because many patients might not be able to recall eating raw fish.

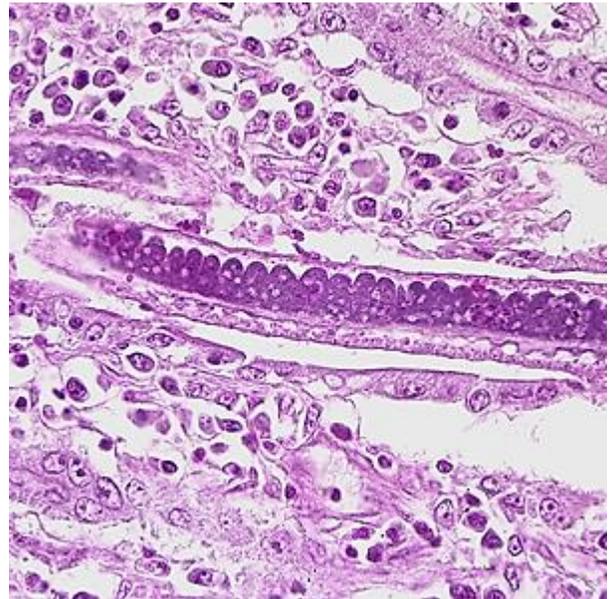
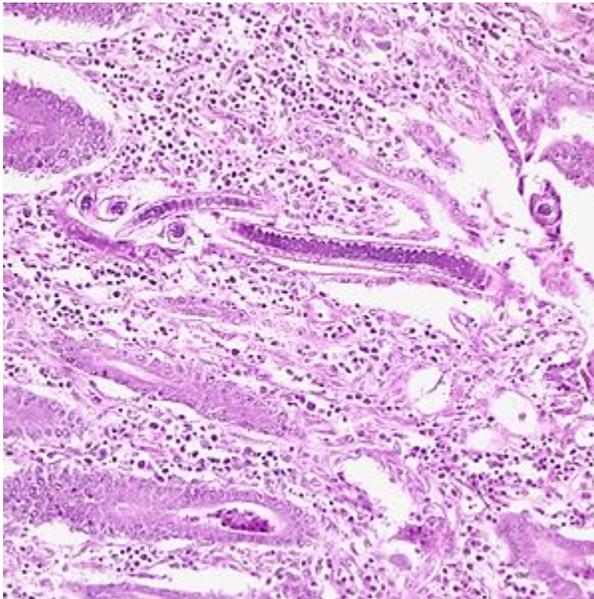
Several studies showed intestinal pathological findings in *C. philippinensis* infection which showed atrophied crypts, flattened villi, and leukocyte cell infiltration that were signs of intestinal cell injury. Therefore, the destruction of the intestinal cell membrane may interrupt nutrient absorption that causes weight loss in intestinal capillariasis patients. Moreover, the intestinal cells' destruction may lead to fluids, proteins and electrolytes loss because those intestinal cells are dysfunctional and cannot control fluids and electrolytes balance in the body that results in a low level of potassium and albumin in the blood of *C. philippinensis* infection patients. The edema in patient, due to hypoalbuminemia according to albumin levels, is plasma protein which controls the fluid in blood vessels by maintaining the osmotic pressure. If the osmotic pressure decreases, the plasma fluid in vessels leaks out of the capillaries into the interstitium and leads to edema in intestinal capillariasis patients.

Although the cause of death was totally unrelated, these incidental findings point up the fact that often autopsy findings provide additional information. The fact that the patient had lived in the Philippines for a year was also significant.

References:

1. **Garcia, LS**, 2016. *Diagnostic Medical Parasitology*, 6th Ed., ASM Press, Washington, DC.

2. **Fan Z, Huang Y, Qian S, Lv G, Chen Y, Yang B, Zhong S, Lin G, Yan G.** 2012. Serious diarrhea with weight loss caused by *Capillaria philippinensis* acquired in China: a case report. *BMC Res Notes*.5:554.
3. **Rana SS, Bhasin DK, Bhatti HS, Gupta K, Gupta R, Nada R, Nagi B, Sinha SK, Singh K.** 2009. Human intestinal capillariasis: diagnosis by jejunal fluid analysis obtained at enteroscopy and reversal of subtotal villous atrophy after treatment. *Endoscopy*. 41(Suppl 2):E102–E103.
4. **Apisarnthanarak P, Apisarnthanarak A, Pongpaibul A, Roongruangchai K, Charatcharoenwitthaya P, Teerasamit W, Mundy LM.** 2013. Four Thai patients with chronic diarrhea, malabsorption, and weight loss. Diagnosis: Capillariasis associated with tubular narrowing of multiple small-bowel loops with fold effacement. *Clin Infect Dis*. 56(1147-8):83–85



(Left) Longitudinal section of an adult *C. philippinensis* from an intestinal biopsy specimen, stained with H&E.

(Right) Higher magnification of Figure (left) showing stichocytes (large glandular cells) within the adult worm.