Capillaria

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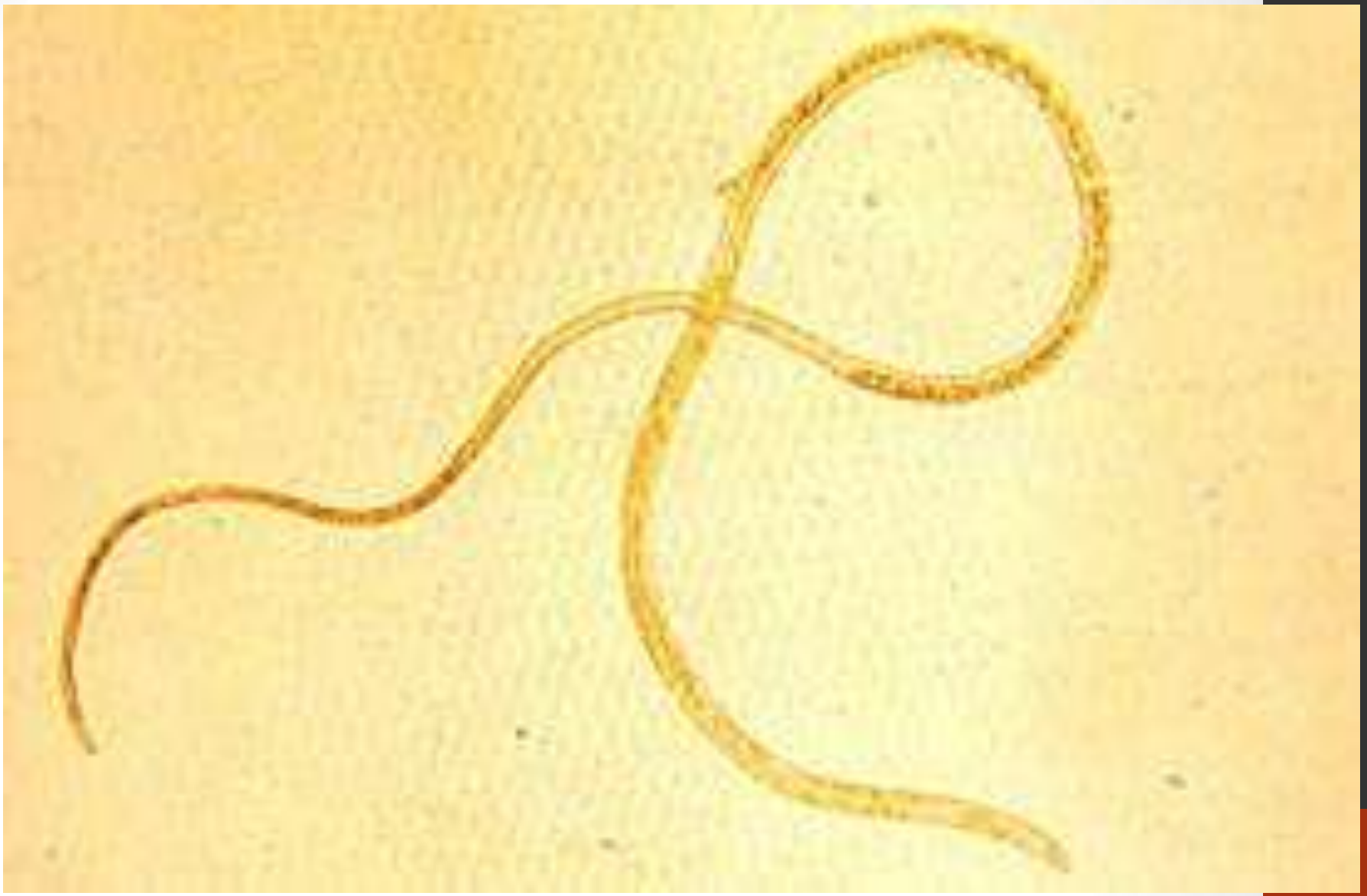
- **ORDER TRICHINELLIDA**
- **Family Capillariidae**

Members of genus *Capillaria* look very much like *Trichuris* spp., except that the transition between the anterior, filiform portion and the posterior, stout portion is gradual, rather than sudden. Other morphological features are similar

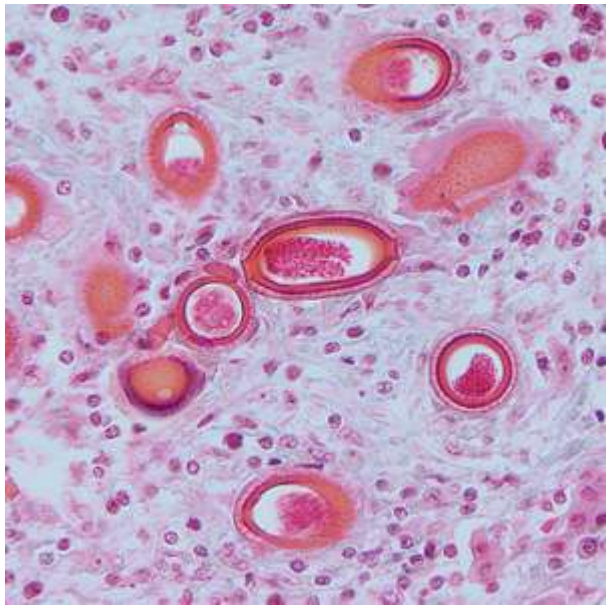


Capillaria hepatica

کرم ماده 7 cm و نر 2 cm

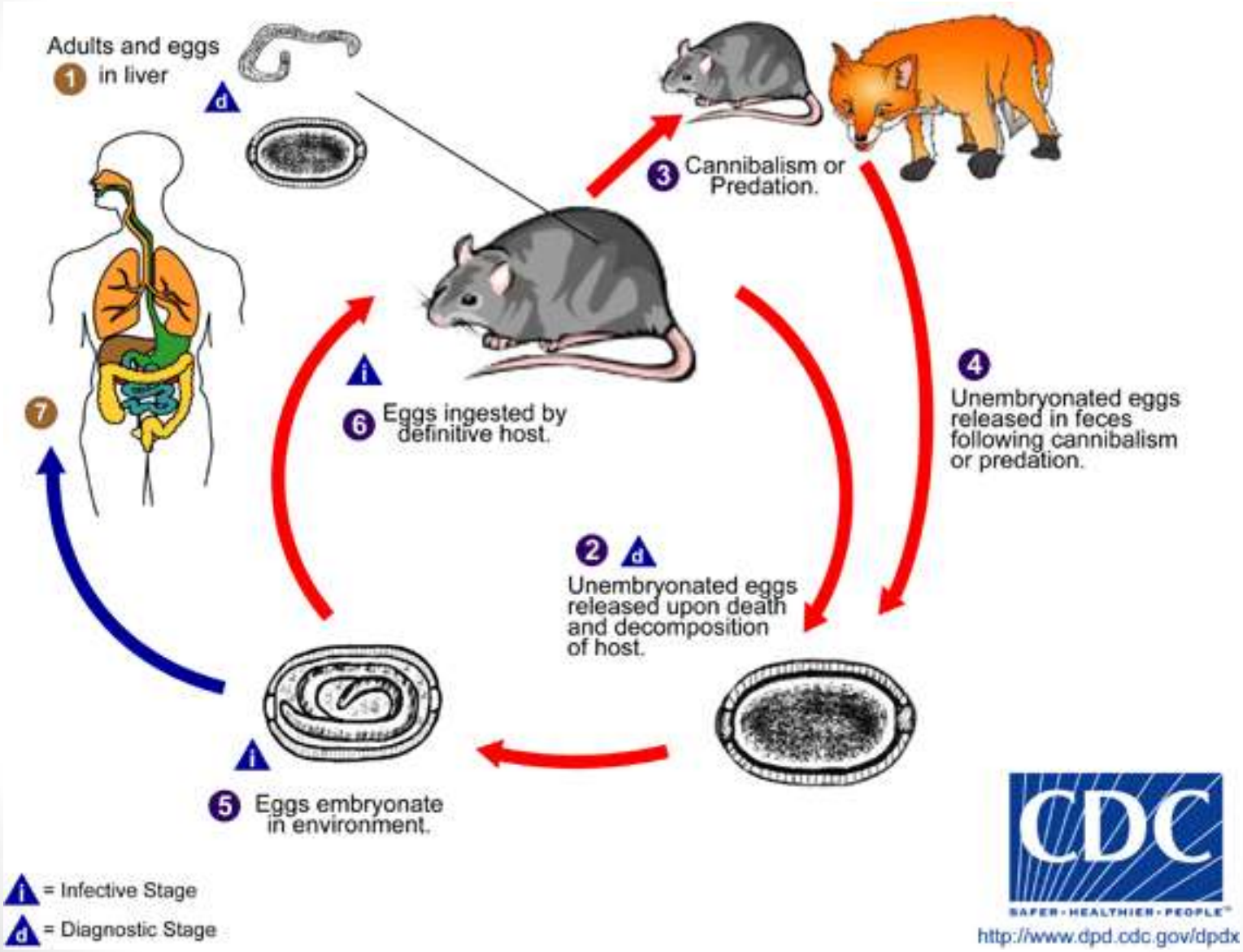
انگل کبد جوندگان

تخم دارای اندازه 48-66 میکرون. دارای دیواره ضخیم و دو زائده هیالینی کوچک و فرورفته در دیواره



Life cylce:

Females deposit eggs in liver parenchyma, where they have no means of egress until they are eaten by a predator or until the liver decomposes after death. Eggs cannot embryonate while in the liver, so a new host cannot be infected when it eats an egg-laden liver. The eggs merely pass through the digestive tract of the predator with feces. Embryonation occurs in soil, and new infection is by contamination. After hatching in the small intestine, juveniles migrate to the liver, where they mature.


Adults and eggs in liver
1
d
3 Cannibalism or Predation.
4 Unembryonated eggs released in feces following cannibalism or predation.
7
i
6 Eggs ingested by definitive host.
2 d
Unembryonated eggs released upon death and decomposition of host.
i
5 Eggs embryonate in environment.
i = Infective Stage
d = Diagnostic Stage
CDC
SAFER·HEALTHIER·PEOPLE™
http://www.dpd.cdc.gov/dpdx

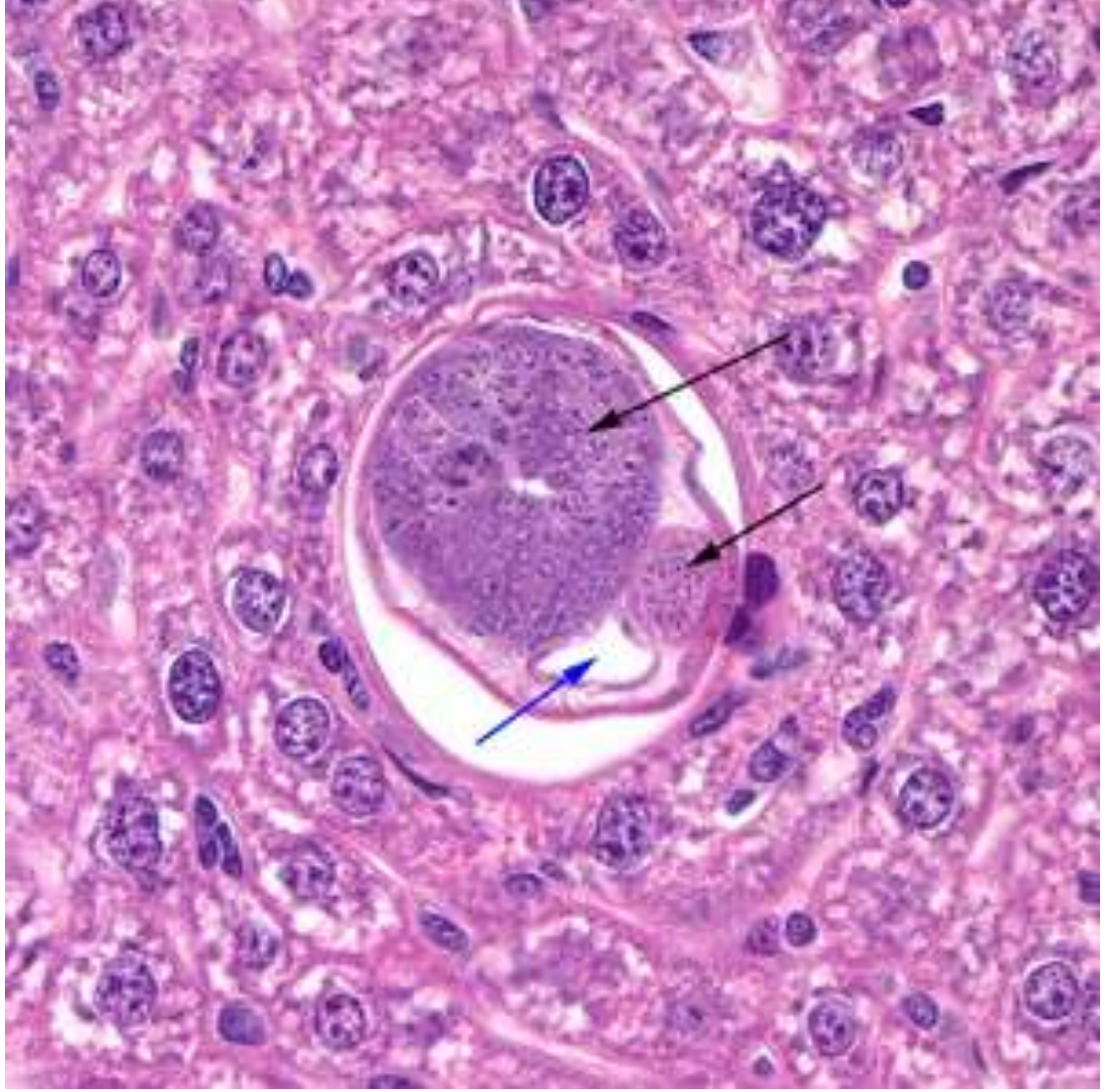
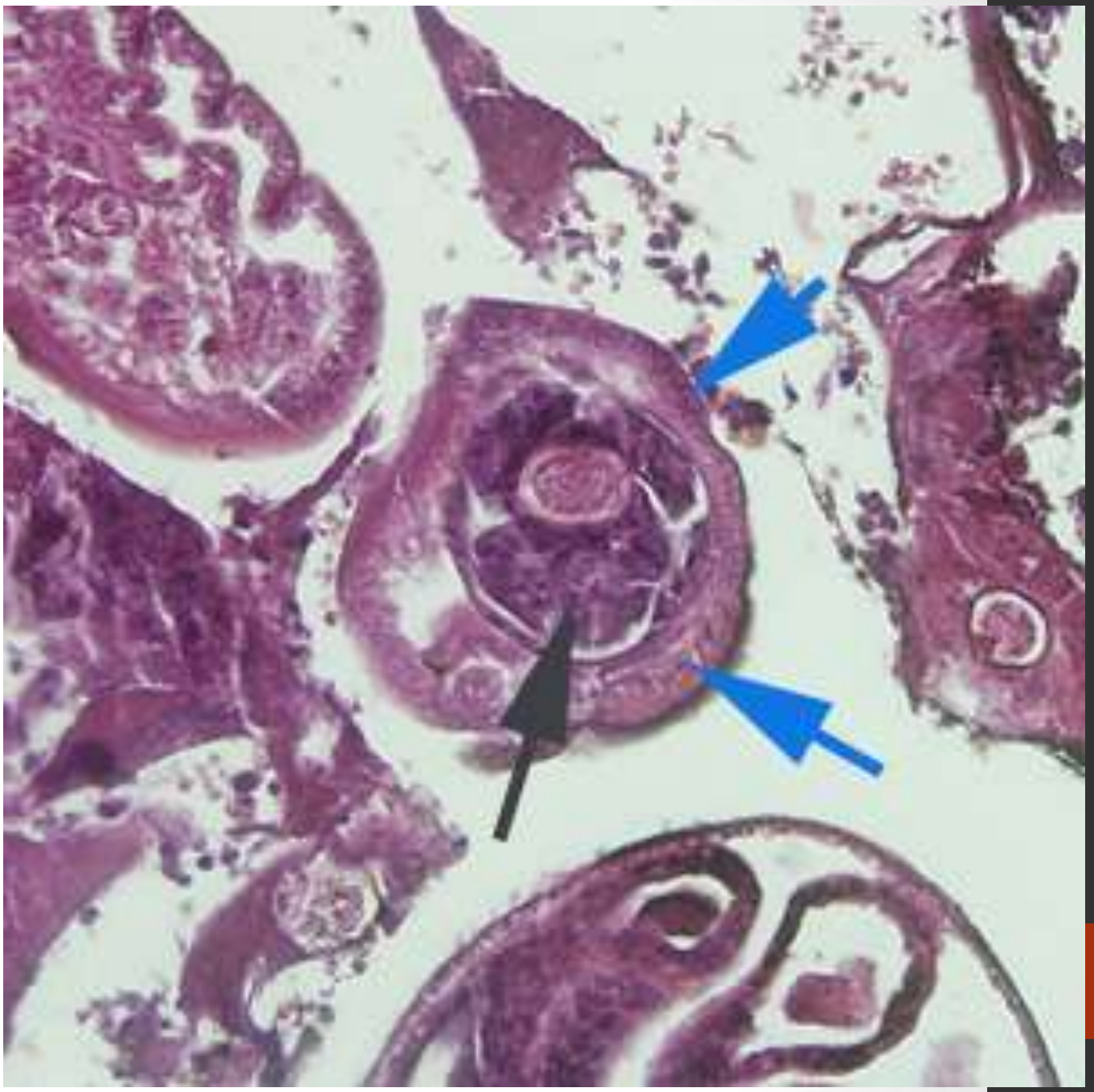


Figure A: Cross section of a male *C. hepatica* in liver tissue, stained with hematoxylin and eosin (H&E). Note the presence of the intestine (blue arrow) and the coiled sections of the testes (black arrows).

Figure B: Cross section of *C. hepatica* in liver tissue, stained with H&E. Note the presence of the intestine (blue arrow) and bacillary bands (black arrows).

Figure C: Cross-section of *C. hepatica* in liver tissue, stained with H&E. Note the presence of a stichocyte (black arrow) and bacillary bands (blue arrows). Image taken at 200x magnification.



Pathology

Wandering of adult *C. hepatica* through the host liver causes loss of liver cells and thereby loss of normal function. Large areas of parenchyma may be replaced by masses of eggs. Rarely eggs will be carried to the lungs or other organs by the bloodstream. Hepatomegaly can become severe, and eggs become encased in granulomatous tissue, with heavy infiltration of eosinophils and other leukocytes

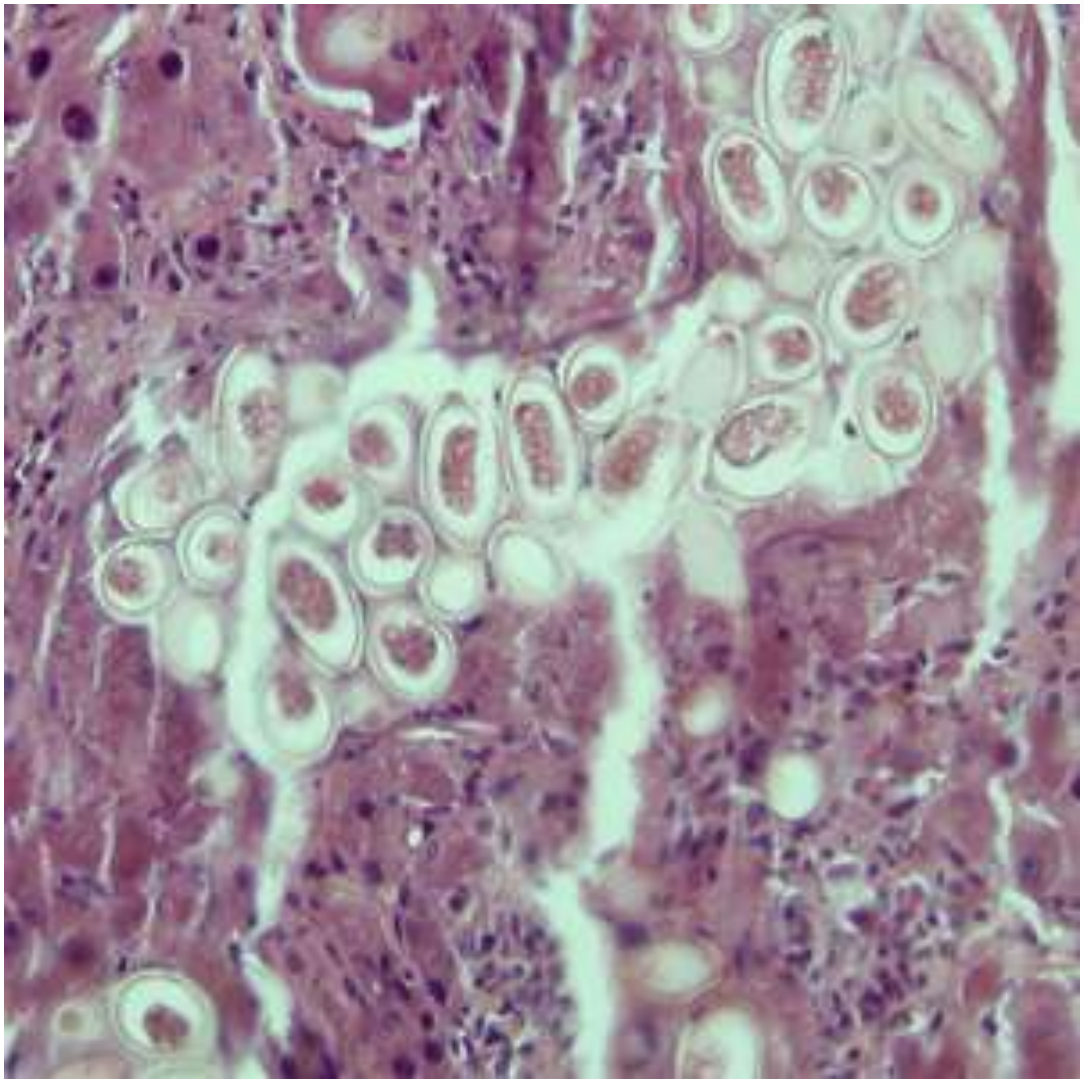


Figure A: Eggs of *C. hepatica* in liver stained with hematoxylin and eosin (H&E).

Diagnosis

There are only 28 reported cases of this parasite in humans, partly because of difficulties of diagnosis. Most cases have been determined after death, but liver biopsy and ultrasonography have uncovered others. Untreated cases may be fatal. Clinical symptoms resemble numerous liver disorders, especially hepatitis with eosinophilia. Specific diagnosis depends on demonstrating eggs, which closely resemble those of *T. trichiura* except that they measure 51 µm to 67 µm by 30 µm to 35 µm and have deep pits in the shells.

Discovery of *C. hepatica* eggs in human feces may indicate the presence of a spurious infection caused by eating an infected liver.

Epidemiology

As with *T. trichiura,* infection occurs when contaminated objects or food is ingested. Choe and coworkers, who reported the first case from Korea, believed that geophagy is especially important in transmission. Unlike with whipworm, however, human feces are not the source of contamination; more likely, feces of carnivores or flesh-eating rodents are involved. Eggs of *C. hepatica* have been found in several species of earthworms.

These transport hosts may facilitate infections in normal definitive hosts.

treatment

- albendazole is currently the drug of choice.

Capillaria philippinensis

Was discovered in 1963 as a parasite of humans in the Philippines. In contrast to *C. hepatica, C. philippinensis* is an intestinal parasite.

It has now been reported from Thailand, Iran, Japan, and Egypt

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Morphology

کرم ماده 2.5-5.3 mm و کرم نر 1.3-3.9 mm (دارای یک اسپیکول)

قسمت قدامی بدن باریکتر از قسمت خلفی

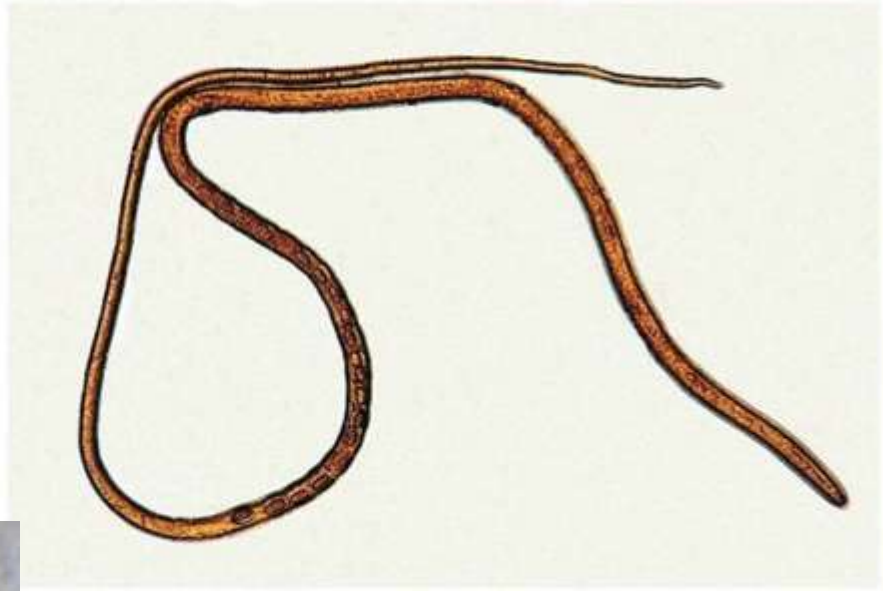
مری پوشیده از استیکوسیت ها

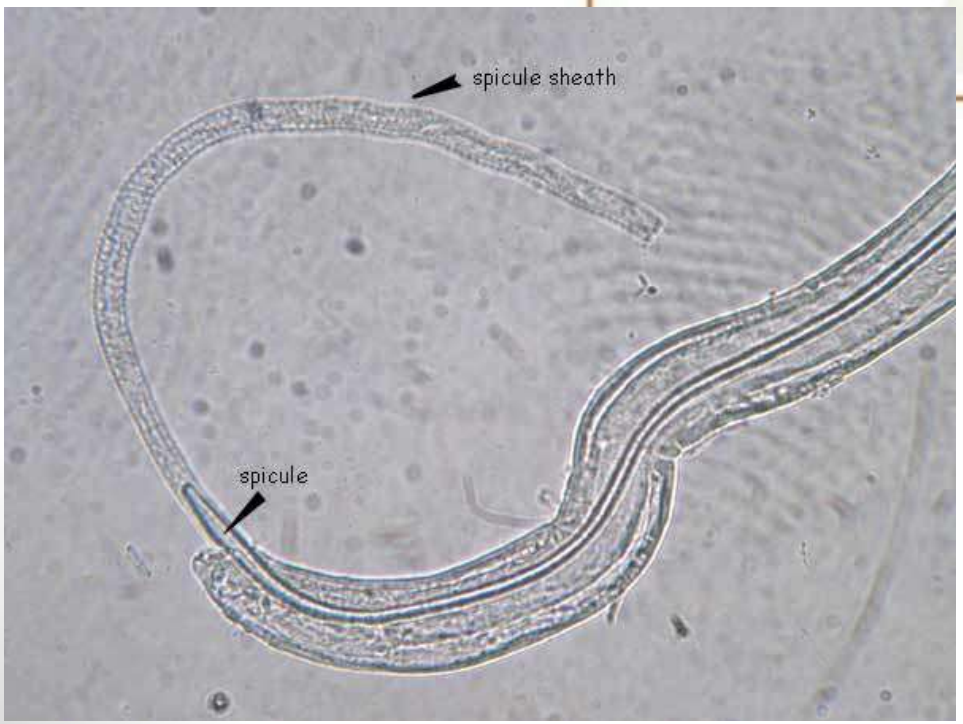
کرم ماده هم لارو و هم تخم دفع می کند.

تخم کرم داری زوائد هیالینی پهن در دو طرف هستند و اندازه تخم 36-45 میکرون می باشد.

Female adult of Capillaria philippinensis (菲律賓毛細線蟲雌性成蟲)

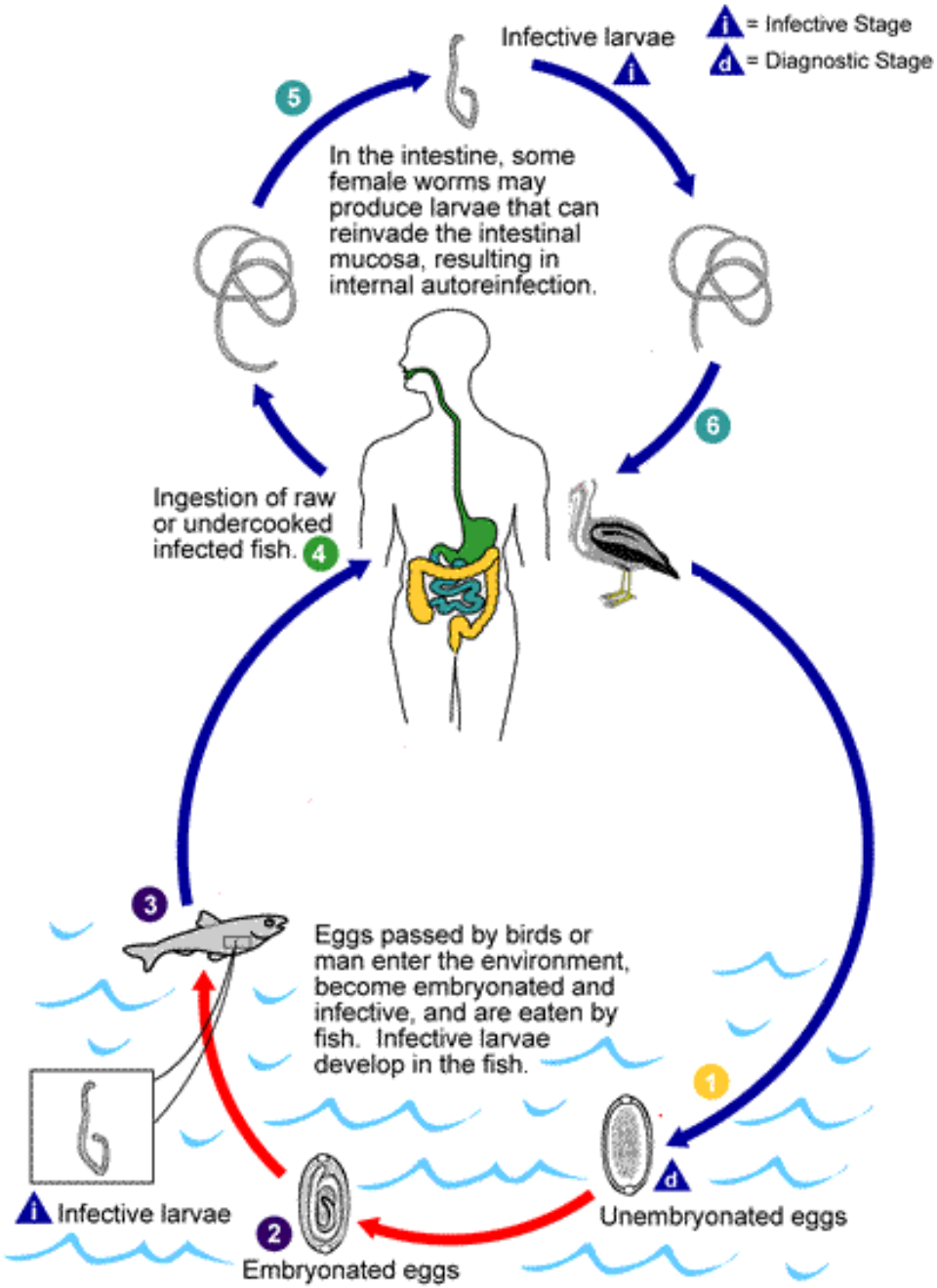
2.3 - 5.3 (3.6) mm
Stichocytes → Stichosome
陰門位於前端約 1/3





Life cycle

It is probably a zoonotic disease, but the original host remains unknown. *Capillaria philippinensis* has been transmitted experimentally to monkeys, gerbils, *Rattus* spp., and several species of migratory fish-eating birds. Some female worms bear living juveniles, and eggs, juveniles, and adults pass from the definitive host in feces. When feces reach water, eggs embryonate and are eaten by small fishes. After hatching in a fish's intestine, juveniles develop for a few weeks until they become infective for a definitive host. Juveniles released by females in a definitive host's intestine are autoinfective, and massive populations can accumulate, causing severe pathology.


i = Infective Stage
d = Diagnostic Stage
Infective larvae
i
5
In the intestine, some female worms may produce larvae that can reinvade the intestinal mucosa, resulting in internal autoreinfection.
6
Ingestion of raw or undercooked infected fish.
4
3
Eggs passed by birds or man enter the environment, become embryonated and infective, and are eaten by fish. Infective larvae develop in the fish.
1
d
Unembryonated eggs
i
Infective larvae
2
Embryonated eggs

epidemiology

Intensive surveys of Philippine fauna have so far failed to identify any reservoir host, but fish-eating birds are prime suspects. Migratory birds are probably the means by which the infection has spread to other Asian countries and even to the Middle East

Pathology

به دلیل فرو رفتن کرم در مخاط، تخریب مخاط و لایه زیر مخاط دیده می شود.

علائم شامل: اسهال و شکم درد دوره ایی، کاهش وزن، تحلیل رفتن عضلات و لاغری مفرط و کاردیوپاتی در 73% موارد دیده می شود

وجود چربی و پروتئین و مواد معدنی خصوصا پتاسیم در مدفوع به دلیل سوء هضم وسوء جذب.

در صورت عدم درمان پس از 2 هفته تا 2 ماه از شروع علائم به دلیل نقص در عملکرد قلب و عفونتهای ثانویه منجر به مرگ می شود.

Diagnosis and Treatment

وجود لارو و تخم کرم در مدفوع

آلبندازول 400 mg/day در دوزهای منقسم به مدت 2-3 هفته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