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■ CORRESPONDENCE ■

Letter to the Editor

Human Hepatic Capillariasis: A Second Case Occurred in Korea

To the Editor:

Monitoring the scientific literature on human cases of *Dirofilaria* infections worldwide, a topic that the first named author follows since more than 30 yr, our attention was drawn to the article by Kim et al. "The first human case of hepatic dirofilariasis", issued in the *Journal*, vol.17, pp. 686-670 (2002). Reading the paper and analysing the figures, we noticed that the authors, unfortunately, misinterpreted the histological sections of the hepatic biopsy by describing some non-existent morphological details, and formulated a wrong parasitological diagnosis. Actually, from the histological sections shown in the four figures of the article, it was clearly visible that it was not *Dirofilaria immitis*, as claimed by the authors, but *Capillaria* (=*Calodium*) *hepatica* (Bancroft, 1893), Travassos, 1915 (*Nematoda*, *Trichinelloidea*, *Capillariidae*), a zoonotic infection of rather common occurrence in rats and mice but extremely rare in man. No more than 30 cases have been reported worldwide since the first case published by MacArthur in 1924 (1). Therefore, given this limited number of cases studied and still several unknown clinical and pathogenetic aspects of this infection in humans, it seems appropriate to record this new case in Korea, where the first case was reported a few years ago (2). Therefore, we would like to re-describe the case briefly using the information reported by Kim et al. The patient was a 39-yr-old man without any history of recent illness, who visited Guro Hospital in Seoul for a routine physical check-up. An ultrasonogram revealed a hepatic subcapsular hypoechoic nodule in the right lobe. After many hematological and serological tests, he agreed to have the resection of the liver segment to rule out any possibility of malignancy. He had no history of travelling abroad.

From the photos of the histological sections, we could notice important morphological details, which have led us to a correct parasitological diagnosis. Fig. 4 showed several sections of the parasite, plunged in a necrotic liver parenchyma surrounded by an inner granulomatous rim and an outer zone of mixed inflammatory cell infiltrates containing plasma cells, lymphocytes, foreign body-type giant cells, and abundant eosinophils. Due to the limited field of the photo, the internal structures of the worm were not evident. Fig. 5 showed a cross-section of an adult worm, where the thin cuticle, the intestine, a sexual tube, and two bacillary bands were evident. Fig. 6 demonstrated a partial view of another adult worm in a strong regressive phase but where the fine striation of the cuticle was well visible. Fig. 7 involved the cross-section possibly of a female worm, with evident internal tubes. Unfortunately, the poor quality of the photos and the regressive conditions of the worm did not allow us to establish precisely whether the sexual tubes visible in the pseudocoeloma belonged to a male or to a female worm. More sections and other staining besides H&E would be necessary for an accurate identification of the worm. The diameter of the cross-sections of the adult of *C. hepatica* (female 78-184 μm, male 80 μm) (3) falls within the range measured by Kim et al. on the presumptive *D. immitis* sections. However, the presence of the bacillary bands, the fine striation on a thin cuticle, the diameter of the adult sections, the peculiar location of the worm, and the histological picture of the inflammatory reaction were sufficient for the diagnosis of *C. hepatica*. The absence of symptoms is also compatible with capillariasis. The positivity of the antibody test by ELISA using crude extracts of adult filarial worm should support the identification of the worm as a *D. immitis*, but we do not consider this test valid as a proof of an actual infestation by this nematode. Our opinion is also supported by many other qualified authors (4-6).

In the paper by Kim et al. no data were presented regarding the hygienic and environmental conditions relating to the patient, so it is difficult to ascertain the way of infection. Nevertheless, since *C. hepatica* represents the most common nematode parasite of the liver of house rats in Korea (88% out of 325 rats examined by Seo et al. [7]), it is possible that the patient was infected through foods contaminated by rat stools containing embryonated eggs of the nematode. The life cycle of the parasite, the list of previous human cases of liver capillariasis in the world, their clinical and histological characteristics, and the pictures of eggs and adults of this nematode are well descrived or presented in the papers by Pampiglione & Conconi (8), Attah et al. (9), Choe et al. (2), and the chapter on *Capillaria* spp. in the text-atlas by Orihel & Ash (3).

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The Author Respond

Dear Sir:

Upon reading the comments on our report of "The first human case of hepatic dirofilariasis" (1), we thank Dr. S. Pampiglione and Dr. A. Gustinelli for providing us a lesson and a chance to correct the inappropriate diagnosis. The case we reported presented degenerated nematode sections in a limited area of the patient's liver. In the process of identifying the nematode sections morphologically, *Capillaria hepatica* was ruled out from the initial stage because egg sections were lacking (1). As shown in Table 1 of the paper by Choe et al. (2), all of previously reported cases of hepatic capillariasis revealed sections of the pathognomonic eggs on histopathologic samples. In this regard, the case was unique and exceptional. The infection with degenerated adult *C. hepatica* without eggs may explain the rarity of human capillariasis. Retrospectively, the absence of egg sections led us to the wrong morphologic identification: while identifying the sections as *Dirofilaria immitis* based on the width, internal structures and estimated length, the coagulated bacillary bands in hypodermis were interpreted as degenerated muscle cells.

Correct identification of helminth sections is not always easy because, in many occasions, the parasites are in the process of different degrees of degeneration, especially in the granulomatous lesions. We regret that we made a wrong diagnosis, and hope this correspondence be a lesson also to other nematodology specialists.

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