A Liver Transplant Recipient with an Infected Explanted Liver

(See the Photo Quiz on page 279)

Figure 1. Micrograph of a liver biopsy specimen from the patient’s explanted liver showing *Clonorchis sinensis* in intrahepatic biliary ducts, with labeled structures. A, Intrahepatic bile duct; B, *C. sinensis* uterus filled with eggs; C, seminal receptacle; D, cecum; E, vitellaria. (Hematoxylin and eosin stain; original magnification, ×100).

Diagnosis: Probable intrahepatic clonorchiasis caused by the Chinese liver fluke *Clonorchis sinensis*.

*C. sinensis* cannot be distinguished histologically from *Opisthorchis viverrini*, which is the more prevalent cause of human infection in Thailand and Laos. The patient was treated with praziquantel (75 mg/kg per day in 3 doses for 1 day).

Histopathological examination of the liver biopsy specimen revealed an adult fluke within the intrahepatic bile ducts (figure 1). Adult flukes are flat, elongated worms approximately 3 × 15 mm in size, and they look like a thick, oval leaf. The adult flukes are all hermaphrodites. The coiled structures visible in figure 1 are the uterus and the testes; in a magnified image of the uterus, eggs can be seen (figure 2).

The liver flukes live and replicate within the biliary tract and can cause bile wall thickening, biliary obstruction, and finally cholangiocarcinoma. The life cycle of *C. sinensis* consists of an asexual phase in freshwater snails (the intermediate host) and a sexual phase in a mammal (the definitive host) [1]. Humans excrete embryonated eggs in their feces, which are ingested by the freshwater snails of the genus *Bithynia*. After multiplying asexually within the snails, the released cercariae penetrate freshwater fish. Once ingested by a mammal, the cercariae pass directly into the bile ducts through the ampulla of Vater, where they become adult flukes, and the cycle repeats. Adult flukes have a life span that is reported to be as long as 25–30 years [1].

Liver flukes usually are acquired by eating raw or lightly cooked freshwater fish in areas where the flukes are endemic [2]. The patient reported eating raw freshwater fish when he lived in Southern China, where fluke infection is endemic; it can also be seen in immigrants from South Korea [3]. Symptoms can range from none to chronic intermittent episodes of abdominal pain. Liver function test results are often normal for patients with this infestation [3]. The diagnosis of liver fluke...
infection is usually made by identification of species-specific eggs in stool specimens. Complete blood cell counts may reveal chronic eosinophilia in infected patients [4].

Once the diagnosis is made on the basis of stool smear findings, fluke infection can be treated with either praziquantel (75 mg/kg per day in 3 doses for 1 day) or albendazole (10 mg/kg per day for 7 days) because of the long natural life of the liver fluke and the association of chronic infection with the development of primary cholangiocarcinoma [4]. Chronic infection has not been associated with hepatocellular carcinoma [4].

It is unknown whether treating this patient with antihelminth agents would be of any benefit after transplantation. There have been no reports of dissemination of Clonorchis infection in transplant recipients or reports of the development of cholangiocarcinoma. In some Asian countries, donor livers with Clonorchis infection are transplanted without disease reactivation, probably because cold perfusion kills the parasite in the donor liver [5, 6]. In the case we describe, because the patient’s extrahepatic biliary ducts were retained and because of his immunocompromised status after transplantation, it was thought prudent to treat him empirically.

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References