



Ultrasonographic aspects of the trematoda *Fasciola hepatica* isolated in acoustic gel

[Aspecto ultrassonográfico do trematoda *Fasciola hepatica* isolado em gel acústico]

“NOTE/NOTA”

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Abstract

This paper describes the ultrasonographic aspects of trematoda *Fasciola hepatica*, isolated in acoustic gel. It was observed a hyperechogenic curvilinear image at the periphery and a hypoechoic internal portion, without the formation of an acoustic shadow. They presented themselves as thin structures with thickness ranging from 1 to 2 mm. Based on knowledge of the ultrasonographic anatomy of *Fasciola hepatica*, the chances of its diagnosis with the ultrasonographic exam increase.

Key words: Ultrasonography, diagnosis, *Fasciola hepatica*.

Resumo

Este artigo descreve os aspectos ultrassonográficos do trematoda *Fasciola hepatica*, isolado em gel acústico. Observou-se uma imagem curvilínea hiperecogênica na periferia e uma porção interna hipoeecóica, sem a formação de sombra acústica. Eles se apresentaram como estruturas finas, com espessura variando de 1 a 2 mm. Com base no conhecimento da anatomia ultra-sonográfica da *Fasciola hepatica*, há o aumento das chances de seu diagnóstico, com o exame ultra-sonográfico.

Palavras-chave: Ultrassonografia, diagnóstico, *Fasciola hepatica*.

Introdução

Fasciolosis is a zoonotic disease caused by the trematoda *Fasciola hepatica* worldwide. It mainly infects ruminants, parasiting the liver. Pigs, monkeys, camels, rabbits, equines and humans have also been reported as possible hosts (ALCAÍNO et al., 2005).

In Brazil, the presence of this parasite has been diagnosed as being present especially in the Southern and Southeastern regions (SERRA-FREIRE et al., 1995; MARTINS,

The diagnosis is based on regional epidemiological aspects, especially information from slaughterhouses and also the laboratorial diagnosis by means of fecal sedimentation exam. The available scatological

2007). This disease assumes an emergeng characteristic, with human cases being reported in many Brazilian municipalities (ABDUL-HADI et al., 1996; LUZ et al., 1999; PILE et al., 2000).

Clinically, an acute phase is observed, with the invasion of the parasite into the hepatic parenchyma, and a chronic phase involving the bile ducts. In humans, ovines and caprines, the disease tends to be progressive, while in bovines, calcification can occur (GONZALO-ORDEN et al., 2003).

techniques have low besides the limitation of the low human excretion of eggs, which makes the distinction of the truly negative, cases quite difficult (GUIMARAES, 2003). New methods of antigen detection have been employed for

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epidemiological information and are limited to researches and for the diagnosis in human who are suspected of being infected by the parasite (CARNEVALE et al., 2001).

Considering that fasciolosis is a disease that is difficult to be diagnosed in vivo, imaging diagnostic techniques, such as magnetic resonance, computed tomography, retrograde cholangio-hepatography and ultrasonography have been used for the diagnosis and follow-up of human patients with fasciolosis; however, its sensitivity and specificity indices are controversial (RICHTER et al., 1999).

Ultrasonographic exams can demonstrate hepatobiliary lesions, such as dilation and moderate thickening of the intra and extra-hepatic biliary ducts and common bile duct (ducts choledochus) (MANSOUR GANAEL et al., 2006). Another find is the appearance of duplicity of the wall and dilation of the common bile duct due to edema and colangitis and increase of the periportal lymph nodes. It is possible to visualize the parasite; however, its identification can be difficult in case it has attached itself to the biliary vesicle (KABAALIOGLU et al., 2000; KABAALIOGLU et al., 2007).

The ultrasonographic diagnosis in humans is favored by the postprandial evaluation, by increasing the contrast between the echogenicity of the parasite and the organ (CORAL, 2007). When the parasite is visualized, it can present itself as a curvilinear structure or as echogenic particles without acoustic shade and floating in the biliary vesicle and common biliary duct (RICHTER et al., 1999; KABAALIOGLU et al., 2000; KABAALIOGLU et al., 2003; CORAL et al., 2007).

The ultrasonographic findings on this parasite are not very specific, without richness of details in the literature that was consulted. The objective of this study was to characterize the parasite's macroscopic aspects in ultrasonographic exams, with the intent of

providing better details of this trematoda, in order to contribute to the diagnosis of this disease in humans and animals.

In the present study, a collection of the *Fasciola hepatica* was performed directly from the livers, immediately after the slaughter of bovines in the municipality of Atílio Vivácqua, in the southern region of the state of Espírito Santo - Brazil. The livers were removed immediately after the slaughter and the live parasites were collected, in a total of 30, where they were immersed in a container with acoustic gel in order to enable their visualization by means of detailed ultrasonography. The exams were performed by using a portable device (Sonosite® 180 Plus) with a transducer with a frequency of 7.5 MHz.

All trematoda evaluated presented a similar image as the exam after a subjective analysis, where a clear hyperechogenic image was observed at the periphery and an internal hypoechoic portion (**Image 1**). It was observed that the parasites did not form a distal acoustic shade and presented themselves as a thin structure with a thickness varying between 1 and 2 mm and lengths oscillating between 10 and 30 mm.

In most cases, few studies demonstrated the ultrasonographic aspects of *Fasciola hepatica*, where the findings, resulting from the alterations promoted by parasite infection in the hepatic parenchyma and biliary tract. The image of this trematoda in humans by means of ultrasonographic exam is referred to as a structure with linear aspect or as echogenic particles floating in the biliary vesicle or common biliary duct, without forming an acoustic shade. Despite the existing descriptions, its direct visualization is frequently difficult in the imaging diagnosis exams performed. In a few cases, it is possible to visualize the parasites inside the dilated biliary ducts, especially when they move (KABAALIOGLU et al., 2000; 2003; 2007).

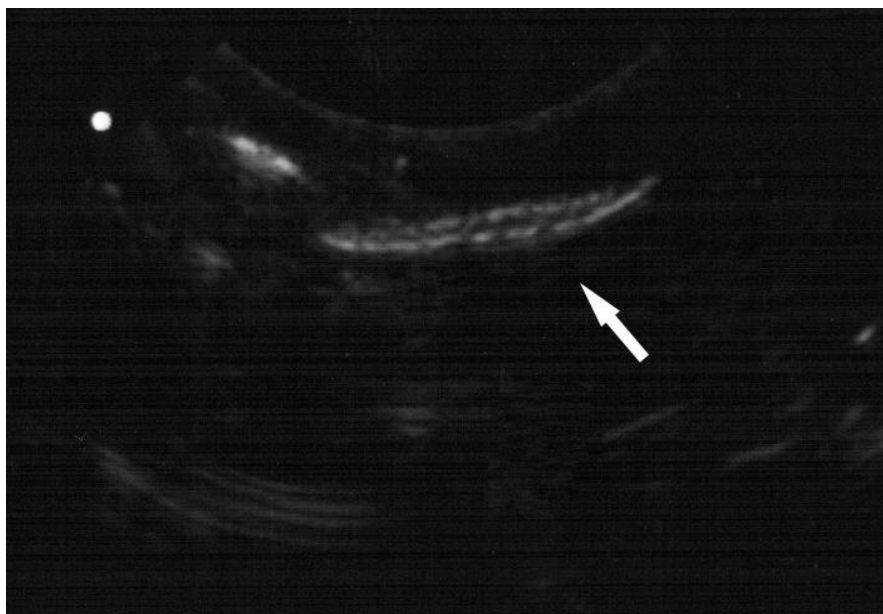


Figura 1. Ultrasonographic image of the Trematoda *Fasciola hepatica* isolated in acoustic gel, demonstrating a curvilinear aspect with hyperechogenicity at the periphery and an internal hypoechoic portion (arrow).

This study's observations have revealed microscopic findings of the parasite, similar to those that have already been described in humans with fasciolosis; however, it allowed for greater detail, since the presence of acoustic gel allowed for a greater contrast and facilitated its observation. It must be emphasized that, based on knowledge of the *Fasciola hepatica* ultrasonographic anatomy, it is possible to better direct the diagnosis of fasciolosis in humans, as well as in animals, especially when the parasite is enveloped in bile.

Ethics and biosafety committee

This study was conducted under approval of the Ethics and Animal Welfare, in Espírito Santo Federal University. Has been observed all ethical animal protection.

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