

SHORT COMMUNICATION

First Report of *Lymnaea columella* Say, 1817 (Pulmonata: Lymnaeidae) Naturally Infected with *Fasciola hepatica* (Linnaeus, 1758) (Trematoda: Digenea) in Argentina

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We report the first evidence of natural infection of Lymnaea columella with Fasciola hepatica in Argentina. A sample of 601 snails was collected in May 2003 in northeastern Corrientes, a province bounded on the north by Paraguay, on the east by Brazil and on the southeast by Uruguay. Among 500 examined snails, 44 (8.8%) were exclusively infected with F. hepatica. Parasite identification was based on morphological features of cercariae from snails, and of eggs and adult flukes from Wistar rats. We discuss the events suggesting that an enzootic transmission cycle of F. hepatica has been recently established in northeastern Corrientes.

Key words: *Lymnaea columella* - *Fasciola hepatica* infection - Argentina

Fasciolosis, caused by the zoonotic liver fluke *Fasciola hepatica*, is an important disease of domestic livestock producing a worldwide economic loss. Snails belonging to genus *Lymnaea* are the known intermediate hosts of *F. hepatica*. In the Southern Cone of South America, *Lymnaea columella* has been found in Brazil (Paraense 1982, 1983, 1986, Abilio & Watanabe 1998, Souza et al. 1998, 2002, Oliveira et al. 2002), Paraguay (Hubendick 1951), Uruguay (Del Huerto López Lemes et al. 1996), and Argentina (Scott 1953, Castellanos & Landoni 1981, Paraense 1982). However, the occurrence of specimens naturally infected with *F. hepatica* has only been reported from Brazil (Rezende et al. 1973, Schafranski et al. 1977, Silva Santos et al. 1987, Ueta 1980, Fujii & Oliveira 1996, Oliveira et al. 2002, Coelho & Lima 2003). In Uruguay, search of the parasite in *L. columella* rendered negative results (Del Huerto López Lemes et al. 1996) and, to our knowledge, in Paraguay and Argentina no parasitological analysis has ever been conducted.

The objective of the present study is to report the first finding of *L. columella* naturally infected with *F. hepatica* in Argentina.

A sample of 601 snails was collected in May 2003 from waterbodies within a private farm at the locality of Berón de Astrada (27°33'S; 57°32'W), in the northeast of Corrientes province, Argentina. This province is bounded on the north by Paraguay, on the east by Brazil and on the

southeast by Uruguay. The studied area belongs to the Amazonian phytogeographic dominion, Paranense province (Cabrera & Willink 1980). The sampling sites were temporary streams bordered on both sides by aquatic vegetation and grass. These streams, which were frequently visited by free roaming cows, collected water from a permanent lagoon. Snails were taken to the laboratory in plastic recipients holding wet cotton pads. Upon arrival, five specimens were relaxed, killed, and preserved in Railliet-Henry's fluid (Paraense 1984), and taxonomically determined by features of the shell and internal organs (Paraense 1983). The rest of the individuals, which were identical in external appearance to those already identified, were kept alive for parasitological analysis. The shell length of all snails was measured from the apex to the anterior margin. Cercarial shedding was checked for one month according to Souza et al. (2002). Preserved and alive snails were dissected to detect trematode larvae in viscera. Determination of *F. hepatica* based on morphological features of cercariae was performed under light microscope (400x). Finally, 25 metacercariae were orally administered to each of six Wistar rats 21-24 days old to confirm identity of *F. hepatica*. Search of eggs in faeces was performed from day 30 postinfection (PI) onwards and the prepatent period was recorded. After egg detection in faeces, rats were dissected for specific determination of adult flukes.

All 601 collected snails were identified as *L. columella* (Fig. 1). The shell length ranged between 1.90-12.00 mm with a mean \pm SD of 6.56 \pm 1.82 mm.

In regard to infection, we examined 500 snails, of which 44 (8.8%) were exclusively infected with *F. hepatica* (Fig. 2). The shell length of infected snails ranged between 3.79-12.00 mm with a mean \pm SD of 7.28 \pm 1.68 mm. Twenty-nine out of the 44 infected snails (66%) were included in

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Fig. 1: *Lymnaea columella* from Corrientes, Argentina

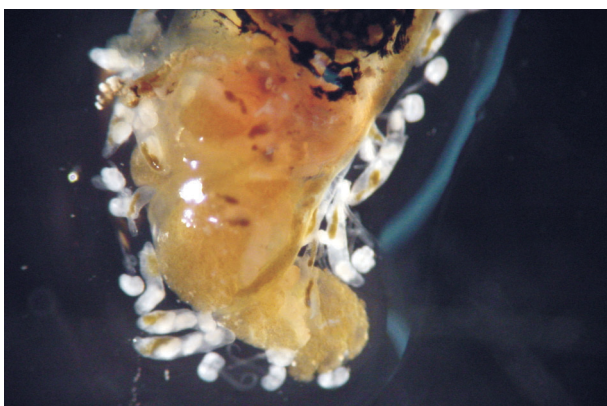


Fig. 2: rediae and cercariae of *Fasciola hepatica* in naturally infected *Lymnaea columella* from Corrientes, Argentina. 50x

the interval of 5.86-8.83 mm. Fig. 3 shows the shell length frequency distribution of dissected snails and the percentage of infection per length class.

The prepatent period of *F. hepatica* in rats was 44-49 days PI and parasite adults were found in all cases.

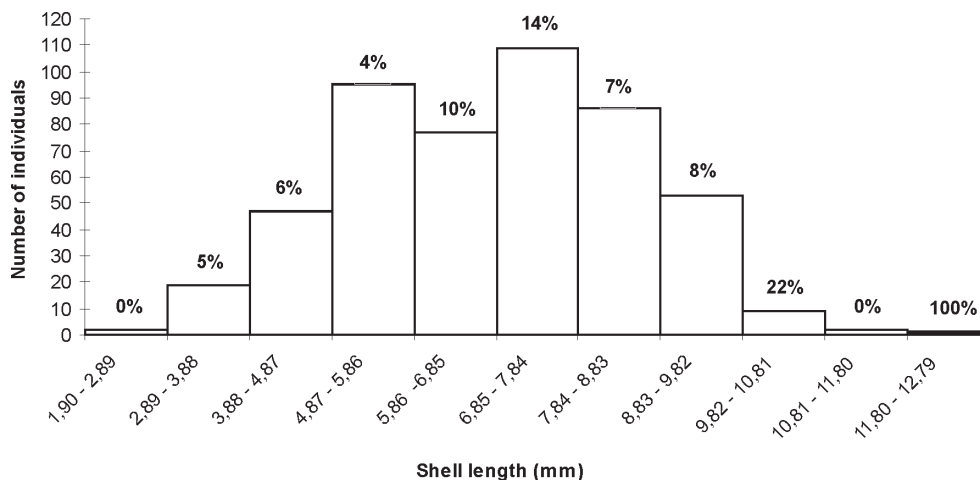


Fig. 3: shell length frequency distribution of dissected *Lymnaea columella* (N = 500) from Corrientes, Argentina. The percentage of snails infected with *Fasciola hepatica* per length class is shown on top of each bar.

The first studies on the distribution, prevalence and economic impact of fasciolosis in the province of Corrientes were conducted in the 70's. At that time, the zoonosis was restricted to the central-western area (Lombardero et al. 1979b), in coincidence with the distribution of *Lymnaea viatrix*, which was the unique intermediate host incriminated in the parasite transmission (Lombardero et al. 1979a). Since then, new cases of fasciolosis were detected at slaughter-houses in the north of the province, as indicated by liver condemnation records (Moriña et al. 1999).

In northern Corrientes, the presence of *L. viatrix* has never been documented, while *L. columella* was first reported in the locality of Ituzaingó (Paraense 1982), located 82 km far from, and at the same latitude as Berón de Astrada. All these facts, together with the high infection rates in snails reported here, clearly show that an enzootic transmission cycle of *F. hepatica* has been established in the study area. One of the most important factors that possibly contributed to this scenario was the water-level increase in nearby Iberá marshes, after the Yacyretá dam was put into operation between 1989 and 1993. Water from the huge Yacyretá lake seeped into lower areas, covering more than 100,000 ha, specially in the department of Ituzaingó (Blanco & Parera 2001). Flood may have increased the number of suitable snail habitats, resulting in a positive impact on *L. columella* populations.

The prevalence of *F. hepatica* in naturally infected *L. columella* from Corrientes (8.8%) is higher than that recorded in the following states of Brazil: Minas Gerais (5.2% and 3.9%, Coelho & Lima 2003); Rio de Janeiro (2.4%, Rezende et al. 1973); São Paulo (1.22% and 0.14%, Ueta 1980; 5.26%, Oliveira et al. 2002) and Rio Grande do Sul (3.3%, Silva Santos et al. 1987). The last figure is particularly interesting since the province of Corrientes is partially bounded by Rio Grande do Sul.

In brief, our results indicate that *L. columella* may play an important epidemiological role in the transmission of *F. hepatica* in Northeast Argentina.

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