

Case report

Human fasciolosis due to *Fasciola gigantica*: the first case report in the southwest of Iran

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ABSTRACT. Fasciolosis is a common parasitic disease in many parts of the world. The current case study is the first report of the confirmed fasciolosis in the southwest of Iran. The patient was a 51-year-old woman whom was referred to hospital for hypochondria pain and mild fever. She had several travels history to north province and consumption of row watercress. Sonography and ERCP (endoscopic retrograde cholangiopancreatography) finding showed two mature *Fasciola* spp. in her common bile duct (CBD). The helminths were pulled from CBD and was identified as *F. gigantica*. The sera of the patient and her family were examined. The titration of antibody against *Fasciola* was high in sera of the patient but not positive for other member of her family. In the area with low prevalence of fasciolosis, patients clinical history and travelling to endemic areas should be considered for correct diagnosis. Fasciolosis should be considered as a travel-borne diseases in endemic areas and the consumption of water vegetables should be avoided.

Keywords: *Fasciola gigantica*, southwest Iran

Introduction

Fasciolosis a parasitic zoonotic disease, is caused by trematodes called *Fasciola*. Infection occurs during consumption of contaminated water vegetables such as watercress with metacercaria stage of the helminth or by drinking contaminated water (food and water borne parasitic disease) in animals and human [1]. Two species of the genus *Fasciola* are responsible for causing the disease including *F. hepatica* (currently in temperate zone) and *F. gigantica* (currently in tropical zone) [2]. The main life cycle is usual consisted of between herbivorous domestic animals such as sheep, cattle, goat and buffalo as definitive host and several species of snail Lymnaeidae family as intermediate host [3]. Geographic distribution of fasciolosis in animals is worldwide and according to geographic areas 10–80% of cattle as final host in the world are infected [4–6].

Fasciola infection in animals cause serious productivity losses in livestock industry which can be estimated approximately more than 200 million US\$ annually [7]. In recent decades, prevalence of human fasciolosis has been increased [8] and 2.4 million people are infected with fasciolosis and 180 million people at risk [9]. Iran is an hyper endemic area in the world and has listed in the six most infected countries by World Health Organization, WHO [10]. The most frequency of disease with very high epidemic were reported from Gilan and Mazandaran provinces, north of Iran [11].

The disease was reported in rare cases in other province of Iran. In Ardebil northwestern province of Iran, a 6-year-old boy reported. A 79-year-old man with gastrointestinal disturbance and several peritoneal mass with a large number of *Fasciola* eggs were also reported in the world [12]. Another reports consisted of cutaneous mass [13], eye [14], liver, spleen, pancreas and kidney [15]. This work

Table 1. Morphometric characterization of *Fasciola gigantica* in present study (mm)

Characteristics	Present sample	Average measurement <i>F. hepatica</i>	Average measurement <i>F. gigantica</i>
BL (body length)	53.29	28.17±5.14	41.08±6.12
BW (body width)	11.35	11.33±1.47	11.89±2.49
CL (cone length)	5.16	2.47±0.43	5.45±1.31
CW (cone width)	4.22	3.13±0.62	3.56±0.34
OS (oral sucker)	0.98	0.7±0.12	0.8±0.11
VS (ventral sucker)	1.78	1.29±0.2	1.76±0.2
OS-VS (distance between OS and VS)	1.68	1.9±0.4	1.79±0.24
A-VS (distance between VS and anterior end)	2.64	2.57±0.48	2.59±0.24
PhL (pharynx length)	0.95	0.99±0.18	0.99±0.13
PhW (pharynx width)	0.67	0.47±0.1	0.54±0.17
TL (testicular length)	17.91	13.9±3.04	16.45±5.37
TW (testicular width)	7.73	7.1±1.19	7.16±1.09
BL/BW ratio	4.70	2.47±0.49	5.06±0.86

conducted to report and explain a rare fasciolosis case in Khuzestan province, the southwest of Iran.

Case presentation

The patient was a 51-year-old woman that was complaining of right subscapular pain and low grade fever. The pain was not regarded to ingestion of meal and was intermittent from two weeks before hospital admission. On physical examination she had normal vital signs (blood pressure, pulse and respiratory rate and alertness) except low grade fever (37.8°C). On abdominal examination there was mild tenderness on right upper quadrant. She had a history of liver abscess (seven years ago) that hepatic tuberculosis had been diagnosed and surgically drainage with completion of anti-TB drug therapy and she had been visited to evaluate and follow up for liver function by liver ultrasonography annually. She had a history of traveling to north of Iran every year and the last time was a year before.

The stool exam was negative for parasite eggs or cyst in three time examination and faeces consistency was soft and brown in color. Stool



Figure 1. *Fasciola* infection in common bile duct using ERCP method. Scale bar =5 cm

culture for bacteria growth was negative. Hematology findings indicated a reduction for WBC 2,930/ μ l, RBC 4*10⁶/ μ l, MCV 68.4, MCH 21.8, Hb 9.4 g/dl and hematocrit 29.4%. There was not seen eosinophilia in hematology test but neutrophilia was 81.7%. The level of direct bilirubin 1.1 mg/dl, SGOT (AST) 64 IU/l, SGPT (ALT) 66 IU/l were elevated but ALK.P 199 IU/l and amylase 98 IU/l were in normal range. ESR (erythrocyte sedimentation rate) 14 mm/hr and creatinine 0.9 g/l was in normal level.

Because of abnormal liver function tests and abdominal pain, abdominal ultrasonography was recomended that was normal. Endosonography was performed, CBD (common bile duct) was 5.5 mm with a continuous lineated filling defect and some mobile sludge was seen within it, gallblader was normal. ERCP (endoscopic retrograde cholangio-pancreatography) was recomended by physician. ERCP was performed and after cannulation of CBD the dye was pushed difficultly in distal part. After sphincterotomy two *Fasciola* parasites were seen that one of them was pulled out (Fig. 1). Then balloon was swept and some sludge was extracted. The parasite was transported to Parasitology Department of Medical School for identification using morphometry mesearments and 3 ml of serum patient and two family members were taken for ELISA test. The finding revealed highly IgG antibody (OD, optic absorbance 492 nm) against *Fasciola* antigen but the results of other family member of patients were negative. Because of triclabendazole was not available on that time, 400 mg of albendazole was prescribed for three days and repeated one week later.

The sample of *Fasciola* spp. was fixed by formalin 10% then was stained by carmine staining. BL (body length), BW (body width), CL (cone length), CW (cone width), OS (oral sucker), VS (ventral sucker), OS-VS (distance between oral sucker and ventral sucker), A-VS (distance between anterior end and ventral sucker), PhL (pharynx length), PhW (pharynx width), TL (testicular length), TW (testicular width), BL/BW ratio were measured using by Olysia software and digital camera according to Aryaeipour et al. and Shafiei et al. [16,17]. The morphometric measurement confirmed the species was belonged to *F. gigantica* shows table 1.

The technique of cfDNA (cell-free DNA) for primary PCR and second nested PCR was done on sera. The cfDNA method has been evaluated for diagnosis of *Fasciola* infection described by Aryaeipour et al. [18,19]. DNA extraction was done using DNA extraction kit (QIAamp DNA Mini Kit, Qiagen GmbH, Hilden, Germany) and primers set were forward: (5'-ACCGGTGCTGA-GAAGACG-3') and reverse: (5'-CGACGTAC-GTGCAGTCCA-3'). This primers amplify a 700 bp nucleotide of ITS 1 region. PCR showed that no positive samples were seen (Fig. 2).

Discussion

Fasciolosis is caused by *Fasciola* genus in 81 countries and is sporadic in many provinces of Iran but two north provinces is known as endemic and hyper endemic areas. In Khuzestan province (southwest of Iran) the disease is common in farm animals, i.e., sheep and goats 5%, cattle 20%, and buffalo 18% [20]. This study is the first report of clinical fasciolosis in Ahvaz, Khuzestan province. The case report was belonged to a woman with several yearly travels to Gilan province and watercress consumption history. She was reffered in Emam Khomayni Hospital due to her gastrointestinal symptoms pertaining to chronic phase of infection. RBC was lower than normal range with mild anemia. Sah et al. [21] indicated that in a 45-year woman with chronic fasciolosis symptoms RBC was below normal reference range. Anemia may be due to mechanical damage of epithelial layer of biliary duct and consumption of RBC by parasite and probably decrease of production of red blood cells by bone marrow [22]. The eosinophilia was not seen in current case. The SGOT and SGPT of liver enzymes were mild

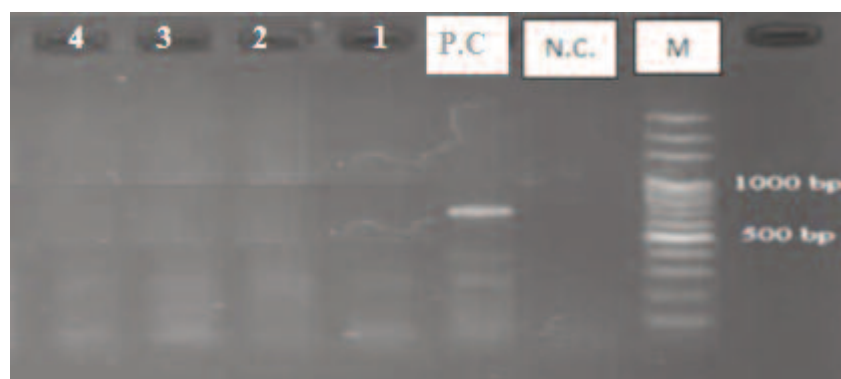


Figure 2. The primary of PCR in four samples of patients. Lane 1– 4: samples, PC: positive control, PN: negative control, M: 100bp DNA ladder

elevated but alkaline phosphatase and amylase were in normal range. This finding was not in agreement with [21]. This may be due to different load of infection and the stage of the disease [22]. The stool exam was negative may due to low burden of infection or for chronic phase [22].

Therefore, personal prevention should be considered for travelling to endemic areas and the consumption of aquatic plants should be avoided.

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