**Supplementary table 1.** Information of the patients with ectopic fascioliasis.

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| **Ectopic site** | **Sex/ age/ country/ occupation/ year of report/ ref** | **Symptoms/signs** | | | **Risk factors** | | **Diagnostic methods** | | **Outcome** | | | |
| **Skin** | M/ 36 y/ Iran/ worker/ 1987/ [1] | 1- Abdominal pain  2- Fever  3- Painful nodules in the chest | | | N. R | | 1- HE in nodules: granulomatous reactions and also, a transverse section of *Fasciola* spp. was observed  2- *Fasciola* ova in stool: negative  3- Anemia: negative  4- CR: normal | | Cured | | | |
| F/ 40 y/ Vietnam/ farmer/ 2005/ [2] | 1- Burning pain at the abdominal  2- Epigastric pain  3- Cutaneous nodules of egg-like and painless in epigastric region  3- Serpentine track under the skin  4- Anorexia, Asthenia, Dizziness | | | 1- She is farmer  2- picking raw watercress | | 1- US examination of both the liver and skin lesion: some small cyst at the liver and serpentine tunnel like track on the skin was seen  2- Aspiration collectedfrom serpentine tunnel like track on the skin: *Fasciola* spp. was observed  3- *Fasciola* ova in stool: negative  4- Serologic test for fascioliasis: positive | | N. R | | | |
| M/ 4 y/ China/ N.R/ 2010/ [3] | 1- Abdominal pain  2- Recurrent bouts of fever  3- Multiple cutaneous nodules had emerged at the epigastric region and serpentine track also appeared under the skin at the same site | | | 1- drinking raw water  2- eating raw watercress | | 1- HE in skin cysts: revealed multiple abscesses, Charcot-Leyden crystals, granulomatous reactions and also juvenile stage *Fasciola* spp. was identiﬁed  2- CT scan and MRI: showed dilatation of intrahepatic bile ducts  3- US: showed multiple poor echo structure in the left lobe of the liver  4- *Fasciola* ova in stool, urine test: negative  5- Liver function tests: normal  6- Eosinophil ratio: 44% (high) | | N. R | | | |
| **Subcutaneous** | F/ 32 y/ Korea/ Teacher, housewife/ 1991/ [4] | An indolent mass at the chest wall | | | N. R | | 1- Laboratory tests: normal  2- Chest X-ray film: revealed a localized swelling of soft tissue at her left lower chest wall  3- US: a solid mass with heterogenous echogenicity were seen  4- EB on vascular lesion: granulomatous lesion and also immature *Fasciola* spp. was identiﬁed  5- ELISA for fascioliasis: positive | | Cured | | | |
| F/ 23 y/ Iran/ housewife/ 1995/ [5] | A painful mass 2x3 cm in size in her right axillary area accompanied with right upper quadrant pain and intermiuent fever | | | 1- live on a farm and contact with livestock  2- Consuming raw vegetables | | 1- HE on nodule: revealed granulomatous reactions and also immature stage *Fasciola* spp. was identiﬁed  2- Liver function tests: normal  3- IFAT for fascioliasis: positive  4- *Fasciola* ova in stool: negative  5- Abdominal examination: normal  6- Chest 'x-ray: normal | | N. R | | | |
| **Eye** | M/ 28 y/ Korea/ N.R/ 1994/ [6] | 1- Headache and motor weakness for a month  2- Sudden pain and blindness of the right eye  3- The enucleated eye revealed areas of a focal degeneration of sclera and intraocular hemorrhage | | | N. R | | 1- Ophthalmoscopy: a worm was recognized penetrating the iris, occupying the anterior chamber. The flatworm detected in the anterior chamber was identified to be a juvenile *Fasciola* spp.  2- Microscopic findings: an abrupt tissue defect and few inflammatory reactions in the uvea | | N. R | | | |
| F/ 44 y/ Iran/ N.R/ 2005/ [7] | Accompanied with a red, painful left eye for 10 days | | | She was living in Guilan, where human fascioliasis was endemic | | 1- Ophthalmoscopy: A small, flat, moving parasite was seen in the anterior chamber. The flatworm detected in the anterior chamber was identified to be an immature *Fasciola* spp.  2- SL examination: endophthalmitis in left  3- US for eye: showed a flat retina  4- US for liver: normal  5- Haematology and biochemistry analysis: normal  6- Liver function tests: normal  7- IFAT for fascioliasis: negative  8- *Fasciola* ova in stool: negative | | 1- Visual acuity decreased  2- Corneal edema  3- Deep vasculisation | | | |
| **Brain and eye** | M/ 8 y/ China/ N.R/ 2007/ [8] | 1- Accompanied with 6 months headache, nausea and vomiting  2- Swelling of the right eyelid accompanied with conjunctiva edema and mild protrusion of the eyeball  3- An itchy and aching sensation on his right lower eyelid | | | Drinking unsafe water | | 1- CT scan: showed hemorrhage of the left parietal lobe  2- DSA: showed a possible right middle cerebral artery aneurysm and left vertebral artery aneurysm  3- Ophthalmoscopy: revealed blurred margins of the bilateral optic disc, optic disc and surrounding area edema of the right eye. Immature *Fasciola* spp. was recognized underneath the mucosa of his right lower eyelid  4- Abdominal ultrasonography: mild hepatomegaly  5- liver function tests: normal  6- *Fasciola* ova in stool: negative | | Cured | | | |
| M/ 10 y/ China/ Student/ 2008/ [9] | 1- Intermittent headache  2-vomiting  3- Fever  4- Ophthalmalgia  5- Eyelid swelling  6- Conjunctival chemosis  7- Vision loss of the right eye | | | The boy came from an area with a higher incidence of fascioliasis | | 1- Ophthalmologic examination: showed that there was bilateral papilledema and narrowness of the right rima oculus, and also a small leaf-shaped parasite was found to have moved out of the swollen conjunctiva of the right eye was identified to be an immature *Fasciola* spp.  2- Head CT scan: showed that there was a hematoma in the right occipital lobe and a subacute subdural hematoma in the left temporoparietal lobe  3- Head DSA: revealed 2 intracranial saccular aneurysms  4- Head MRI: revealed a large new subdural hematoma in the left frontotemporoparietooccipital lobe  5- ELISA and IHA for fascioliasis: positive  6- Eosinophil ratio: a slight increase (6.7%)  7- Liver function test: normal  8- blood coagulation test: normal  9- CT scan and US of the abdomen: mild enlargement of the liver with a normal bile duct tree and no nodules in the liver.  10- The ESR and the level of CRP: mildly increased  11- Chest x-ray and electrocardiogram: normal  12- *Fasciola* ova in stool: negative | | Cured | | | |
| F/ 44 y/ Argentina/ N.R/ 1967 [10] | 1-Headache  2-Aphasia with opisthotonos  3-Delirium,  3-Psychotic symptoms  4-Spasm of the extrinsic ocular muscles | | | She often ate  salads made of raw vegetables and especially  of watercress | | 1- Neurological examination: was normal except for right hyperreflexia.  2- Laboratory tests:  -Blood urea nitrogen and blood sugar values were normal.  -Total blood protein was slightly diminished.  -Urinalysis was normal.  3- Anemia: slight  6- X-rays of the skull: normal.  7-Electroencephalogram: revealed a left frontotemporal focus.  8-Microscopic examination of brain tissue showed a great number of eggs of the *F. hepatica*. | | Died | | | |
| **Caecum and colon** | F/ 19 y/ Korea/ N.R/ 1982/ [11] | 1- Abdominal pain  2- Mild fever  3- Anorexia  4- Weight loss  5- Non-tender mass in the RUQ of the abdomen | | | N. R | | 1- HE: revealed a worm structure impacted in the muscle coat was identified to be an immature *Fasciola* spp.  2- Eosinophil ratio: 23% (high)  3- *Fasciola* ova in stool: negative  4-Stool was positive for occult blood  5- Colon x-ray: revealed ‘finger print’ shadow in caecum and asceding colon  6- IP for the suspicious retroperitoneal mass: normal  7- Colon fiberoscopy: normal | | N. R | | | |
| **Caecum** | F/ 27 y/ Korea/ N.R/ 1984/ [12] | 1- A palpable mass in the right lower abdomen  2- Nausea and vomiting | | | N. R | | 1- HE: sections of cecal wall contained a worm structure. The flatworm was identified as juvenile stage *Fasciola* spp.  2- X-rays of chest, abdomen and gallbladder: normal  3- FE of the stomach and esophagus: normal  4- *Fasciola* ova in stool: negative  5- IP: normal | | N. R | | | |
| **Colon** | M/ 55 y/ Turkey/ N.R/ 2007/ [13] | 1- Abdominal pain  2- A solid mass, originating from the right colon was found | | | N. R | | 1- HE of the colon: revealed granulomas with central necrosis and Charcot Leyden crystals, surrounded by an inflammatory infiltrate with eosinophils secondary to *Fasciola* spp.  2-Abdominal US: showed gallstones in the gallbladder  3- CT scan: showed a 4cm × 7 cm intraluminal mass originating from the ascending colon  4- Laboratory findings, including liver function tests, ESR, WBC count and tumor markers were unremarkable.  5- Eosinophil ratio: normal  6- IHA for fascioliasis: positive | | Cured | | | |
| F/ 46 y/ Turkey/ N.R/ 2009/ [14] | 1- Abdominal pain  2- Abdominal tenderness and a mass on her upper left quadrant  3- Malaise  4- Nausea and vomiting | | | Eating raw watercress | | 1- HE of the colon: showed the presence of a colonic granulomatous lesion due to *Fasciola* spp.  2-US and CT scans of the abdomen: showed the presence of  amorphous cystic lesion  \* Eosinophil ratio: normal  \* IHA for fascioliasis: positive | | Cured | | | |
| **Abdominal** | M/ 6 y/ Turkey/ N.R/ 2011/ [15] | 1- Abdominal pain, tenderness and rigidity  2- Fever  3- Diarrhea  4- Weight loss | | | N.R | | 1- HE: showed granulomatous lesions containing multinuclear giant cells and histiocytes  2- *Fasciola* ova in stool: negative  3-Physical examination: fever (38.7°C), diffuse abdominal tenderness and rigidity  4- X-rays of the abdomen: showed air fluid level in the right lower quadrant  5- US of the abdomen: showed intra-abdominal fluid collection  6- CR and thorax CT scan: normal  7- Serologic tests for cytomegalovirus, Epstein-Barr virus, human immunodeficiency virus, salmonella, and brucella: negative  8- IgE: high, 1300 U/ml (normal: 0-90 U/ml)  9- IHA for fascioliasis: positive  10- Nitroblue tetrazolium test and dihydrorhodamine assay were normal for chronic granulomatous disease | | Cured | | | |
| **Mesocolon** | F/ 56 y/ Korea/ N.R/ 2015/ [16] | 1- Abdominal pain, tenderness  2- Abscess was found in the left lower paracolic gutter | | | Eating lotus leaf extracts for a few months | | 1- HE of the colon: showed numerous eggs of *Fasciola* spp. with acute and chronic granulomatous inflammations due to adult worm of *Fasciola* spp.  2- ELISA for fascioliasis: positive  3- CT scan of the abdomen: an abscess was found in the left lower paracolic gutter  4- Physical examination: revealed tenderness in the left lower quadrant of the abdomen  5- Eosinophil ratio: 13.8% (high)  6- Serum elec­trolytes and liver enzymes: normal range | | Cured | | | |
| **Pancreas** | M/ 72 y/ Japan/ N.R/ 1991/ [17] | Abdominal pain | | | N. R | | 1- Resection of the pancreatic and total gastrectomy was performed. A lot of parasite eggs were found in the lesion. The size and shape of parasite eggs identified them as those of *Fasciola* spp.  2- US and CT scans of the abdomen: showed a space-occupying lesion in the pancreatic body.  3- ERP: revealed a cystic mass in the pancreatic body.  4- Ouchterlony test and immunoelectrophoresis: indicated the infection was *Fasciola* spp. | | N. R | | |
| F/ 31 y/ Spain/ N.R/ 2005/ [18] | 1- Abdominal pain  2- nausea  3- severe tenderness in epigastrium with hypoactive  bowel sound | | N. R | | 1- ES was done with extraction of multiple fluke *Fasciola* spp.  2- US and CT scans of the abdomen: showed diffuse enlargement of the pancreas  3- Cholangiogram: showed dilatation and numerous filling defects in the main bile duct.  4- Laboratory test: revealed high serum levels of  pancreatic enzymes | | Cured | |
| F/ 60 y/ Turkey/ N.R/ 2007/ [19] | 1- Abdominal pain  2- nausea and vomiting | | The patient lived near the water | | 1- HE on Pancreas: Two leaf-shaped helminths were observed. The flatworm was identified to be a *Fasciola* spp.  2- US of the abdomen: revealed bile sludge in the gallbladder as well as diffuse and fusiform dilation of the extrahepatic bile ducts  3- CT scan of the abdomen: revealed a distended gallbladder  4- *Fasciola* ova in stool and the bile fluid: positive  5- ELISA for *F. hepatica*: positive | | Cured | |
| **Neck** | M/ 58 y/ Peru/ N.R/ 2009/ [20] | 1- Asymptomatic, soft, mobile and painless lump on the left side of his neck that had been present for over a year  2- No other symptoms were evident | | 1-living in a livestock-raising area  2- Eating atajo\* on a daily basis  \*Atajo is a vegetable similar to watercress that grows in streams | | 1- CT scan were reported as an inflammatory lesion  2- SB: showed granuloma with multinucleated giant cells, which contained structures of refringent wall with cuticle, probably belonging to a parasite.  3- HE: revealed eggs of a trematode, probably *Fasciola* spp., in the subcutaneous tissue with cellular inflammation and eosinophils  4- Immunohistochemistry stain: showed numerous *Fasciola* spp. eggs forming granulomas surrounded by fibrous tissue  5- *Fasciola* ova in stool: negative  6- Eosinophil ratio: normal  7- US of the abdomen: normal  8- WB for fascioliasis: positive | | Cured | |
| F/ 24 y/ Iran/ N.R/ 2017/ [21] | 1- The neck mass was located on the anterior aspect of left thyroid lobe  2- The thyroid lobe had a nodule, with soft consistency, and mobile, no adhesion. | | Contact with cow, rooster, and regional meadow animals | | 1- Pathology diagnosis of the muscle biopsy and thyroid revealed presence of granulomatous reaction around parasitic larvae.  2- Serologic test for fascioliasis: positive  3- CT scan revealed a large solid mass containing multiple cystic components in anterior thyroid lobe | | N. R | |
| **Peritoneal** | M/ 79 y/ Iran/ N.R/ 2012/ [22] | 1- Abdominal pain  2- Nausea  3- Intestinal obstruction symptoms | | Consumption of watercress | | 1- HE: showed numerous eggs of *Fasciola* spp. with dense mixed inflammatory cells infiltration and fibrosis in peritoneal masses  2- IHA for *Fasciola* spp.: positive | | Cured | | |
| **Lymph node** | First patient: F/ 46 y/ Australia/ N.R/ 1992/ [23]  Second patient: M/ 34 y/ Australia/ abattoir worker/ 1992/ [23] | Both patients presented with acute, superficial swelling in cervical | | The second patient was abattoir worker | | 1- HE showed: First patient: the lump was found to be a cervical lymph node containing a mature *Fasciola* spp. which had released eggs into surrounding tissues.  Second patient: subcutaneous lesion resembled an infected sebaceous cyst and contained an immature fluke.  2-For both patients, *Fasciola* ova in stool: negative  3- For both patients, eosinophil ratio: normal  4- A serological test for fascioliasis was carried out in the second case and the result was positive. | | Cured | | | | | |
| **Lung** | F/ 56 y/ Caucasian/ N.R/ 2013/ [24] | 1- complaining of right-sided chest pain  2- A low-grade fever with chills  3- a cough with foul-tasting sputum  4- Weight loss | | N. R | | 1- HE of the bronchial alveolar lavage was showed the presence of eosinophils and Charcot-Leyden crystals and parasite eggs  2- Bronchoscopy: the microscopy of the bronchial washings revealing eggs of the trematode *Fasciola* spp.  3- CR (x-ray) revealed a lung abscess.  4- CT scan of the chest revealed a rupture of the abscess into the pleural cavity  5- The liver scan revealed gallstones in the left lobe, suggestive of multiple liver cysts.  6- IFAT for fascioliasis: positive | | Cured | | | | | |
| **Dorsal Spine** | F/ 30 y/ India/ N.R/ 2006/ [25] | | 1- Gradual onset bilateral lower extremity weakness and numbness  2- She had sensory–motor spastic paraplegia at T6 vertebra, with bladder and bowel involvement.  3-Neuroimaging revealed an epidural mass lesion isointense on T1 and hyperintense on T2, extending from the T4–T7 vertebra with epidural cord compression. | N. R | | 1- Surgery and T4–T7 laminectomy was performed. During removal of the epidural mass, a live, intact, mobile, leaf-like, flat, pink colored parasite was seen deep inside the epidural granulation tissue. The parasite was confirmed as *Fasciola* spp.  2- *Fasciola* ova in stool: negative  3- US of the abdomen: normal | | Cured | | | | | |

N.R: Not reported. IFAT: indirect immunofluorescence test. IHA: indirect haemagglutination. CR: chest radiography. CRP: C-reactive protein. CT: computedtomography. DSA: digital subtraction angiography. EB: excisional biopsy. ES: endoscopic sphincterotomy. ERP: endoscopic retrograde pancreatography. ESR: erythrocyte sedimentation rate. FE: fibroscopic examination. HE: histological examinations. IP: intravenous pyelography. MRI: magnetic resonance imaging. SB: surgical biopsy. SL: slit lamp. US: ultrasonography. WB: western blot.

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