**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 pain2- Fever3- Painful nodules in the chest | N. R | 1- HE in nodules: granulomatous reactions and also, a transverse section of *Fasciola* spp. was observed2- *Fasciola* ova in stool: negative3- Anemia: negative4- CR: normal | Cured |
| F/ 40 y/ Vietnam/ farmer/ 2005/ [2] | 1- Burning pain at the abdominal2- Epigastric pain3- Cutaneous nodules of egg-like and painless in epigastric region3- Serpentine track under the skin4- Anorexia, Asthenia, Dizziness | 1- She is farmer2- 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 seen2- Aspiration collectedfrom serpentine tunnel like track on the skin: *Fasciola* spp. was observed3- *Fasciola* ova in stool: negative 4- Serologic test for fascioliasis: positive | N. R |
| M/ 4 y/ China/ N.R/ 2010/ [3] | 1- Abdominal pain2- Recurrent bouts of fever3- 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 identiﬁed2- CT scan and MRI: showed dilatation of intrahepatic bile ducts3- US: showed multiple poor echo structure in the left lobe of the liver4- *Fasciola* ova in stool, urine test: negative5- Liver function tests: normal6- 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: normal2- Chest X-ray film: revealed a localized swelling of soft tissue at her left lower chest wall3- US: a solid mass with heterogenous echogenicity were seen4- EB on vascular lesion: granulomatous lesion and also immature *Fasciola* spp. was identiﬁed5- 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 livestock2- Consuming raw vegetables | 1- HE on nodule: revealed granulomatous reactions and also immature stage *Fasciola* spp. was identiﬁed2- Liver function tests: normal3- IFAT for fascioliasis: positive4- *Fasciola* ova in stool: negative 5- Abdominal examination: normal6- 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 eye3- 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 retina4- US for liver: normal5- Haematology and biochemistry analysis: normal6- Liver function tests: normal7- IFAT for fascioliasis: negative8- *Fasciola* ova in stool: negative | 1- Visual acuity decreased2- Corneal edema3- Deep vasculisation |
| **Brain and eye** | M/ 8 y/ China/ N.R/ 2007/ [8] | 1- Accompanied with 6 months headache, nausea and vomiting2- Swelling of the right eyelid accompanied with conjunctiva edema and mild protrusion of the eyeball3- An itchy and aching sensation on his right lower eyelid | Drinking unsafe water | 1- CT scan: showed hemorrhage of the left parietal lobe2- DSA: showed a possible right middle cerebral artery aneurysm and left vertebral artery aneurysm3- 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 eyelid4- Abdominal ultrasonography: mild hepatomegaly5- liver function tests: normal6- *Fasciola* ova in stool: negative  | Cured |
| M/ 10 y/ China/ Student/ 2008/ [9] | 1- Intermittent headache2-vomiting3- Fever4- Ophthalmalgia5- Eyelid swelling6- Conjunctival chemosis7- 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 lobe3- Head DSA: revealed 2 intracranial saccular aneurysms 4- Head MRI: revealed a large new subdural hematoma in the left frontotemporoparietooccipital lobe5- ELISA and IHA for fascioliasis: positive6- Eosinophil ratio: a slight increase (6.7%)7- Liver function test: normal8- blood coagulation test: normal9- 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 increased11- Chest x-ray and electrocardiogram: normal12- *Fasciola* ova in stool: negative  | Cured |
| F/ 44 y/ Argentina/ N.R/ 1967 [10] | 1-Headache2-Aphasia with opisthotonos 3-Delirium, 3-Psychotic symptoms 4-Spasm of the extrinsic ocular muscles | She often atesalads made of raw vegetables and especiallyof 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: slight6- 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 pain2- Mild fever3- Anorexia4- Weight loss5- 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: negative4-Stool was positive for occult blood5- Colon x-ray: revealed ‘finger print’ shadow in caecum and asceding colon6- IP for the suspicious retroperitoneal mass: normal7- Colon fiberoscopy: normal | N. R |
| **Caecum** | F/ 27 y/ Korea/ N.R/ 1984/ [12] | 1- A palpable mass in the right lower abdomen2- 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: normal3- FE of the stomach and esophagus: normal4- *Fasciola* ova in stool: negative 5- IP: normal | N. R |
| **Colon** | M/ 55 y/ Turkey/ N.R/ 2007/ [13] | 1- Abdominal pain2- 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 gallbladder3- 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: normal6- IHA for fascioliasis: positive | Cured |
| F/ 46 y/ Turkey/ N.R/ 2009/ [14] | 1- Abdominal pain2- Abdominal tenderness and a mass on her upper left quadrant3- Malaise4- 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 ofamorphous cystic lesion\* Eosinophil ratio: normal\* IHA for fascioliasis: positive | Cured |
| **Abdominal** | M/ 6 y/ Turkey/ N.R/ 2011/ [15] | 1- Abdominal pain, tenderness and rigidity2- Fever3- Diarrhea4- Weight loss | N.R  | 1- HE: showed granulomatous lesions containing multinuclear giant cells and histiocytes2- *Fasciola* ova in stool: negative3-Physical examination: fever (38.7°C), diffuse abdominal tenderness and rigidity4- X-rays of the abdomen: showed air fluid level in the right lower quadrant5- US of the abdomen: showed intra-abdominal fluid collection6- CR and thorax CT scan: normal7- Serologic tests for cytomegalovirus, Epstein-Barr virus, human immunodeficiency virus, salmonella, and brucella: negative8- IgE: high, 1300 U/ml (normal: 0-90 U/ml) 9- IHA for fascioliasis: positive10- 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: positive3- CT scan of the abdomen: an abscess was found in the left lower paracolic gutter4- Physical examination: revealed tenderness in the left lower quadrant of the abdomen5- 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 pain2- nausea3- severe tenderness in epigastrium with hypoactivebowel 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 pancreas3- Cholangiogram: showed dilatation and numerous filling defects in the main bile duct.4- Laboratory test: revealed high serum levels ofpancreatic enzymes | Cured |
| F/ 60 y/ Turkey/ N.R/ 2007/ [19] | 1- Abdominal pain2- 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 ducts3- CT scan of the abdomen: revealed a distended gallbladder4- *Fasciola* ova in stool and the bile fluid: positive5- 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 year2- No other symptoms were evident | 1-living in a livestock-raising area2- 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 lesion2- 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 eosinophils4- Immunohistochemistry stain: showed numerous *Fasciola* spp. eggs forming granulomas surrounded by fibrous tissue 5- *Fasciola* ova in stool: negative6- Eosinophil ratio: normal7- US of the abdomen: normal8- 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 lobe2- 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: positive3- 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- Nausea3- Intestinal obstruction symptoms | Consumption of watercress | 1- HE: showed numerous eggs of *Fasciola* spp. with dense mixed inflammatory cells infiltration and fibrosis in peritoneal masses2- 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: negative3- For both patients, eosinophil ratio: normal4- 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 pain2- A low-grade fever with chills3- a cough with foul-tasting sputum4- Weight loss | N. R | 1- HE of the bronchial alveolar lavage was showed the presence of eosinophils and Charcot-Leyden crystals and parasite eggs2- 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 cavity5- 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 numbness2- 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: negative3- 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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