**Quiz - In the travel clinic**

A 27-year-old male traveller was admitted to hospital in the Netherlands because of fever and weight loss. He travelled in Africa from north to south during 9 months. He started in Morocco, crossed the Sahara and continued via Nigeria to Zimbabwe. Four months before admission he developed fever, headache and muscle aches; he went to a local laboratory and was found to have a positive blood film for malaria. He was treated with an antimalarial drug after which the fever disappeared. Two months before admission he had an episode of diarrhoea with some blood admixture; there was no fever. He used some tablets from his travel companion (‘against diarrhoea’) and improved. One month before admission he developed fever and muscle aches that continued until admission; later there was also right upper quadrant abdominal pain.

He had been adequately vaccinated for DTP (booster), typhoid fever, hepatitis A and B and rabies; he used Malarone as malaria prophylaxis, albeit intermittently.

After returning home, he had persistent intermittent fever, abdominal pain, right shoulder pain and generalized weakness. There was slight non-productive cough. He had lost 5 kg of weight since the start of the fever. He was admitted to hospital.

Physical examination

Ill looking; not jaundiced; not pale.

Vital signs: blood pressure 130/85 mm Hg; pulse rate 95/min, regular; respiratory rate 24/min; temperature 39.5 C.

Head and neck: no abnormalities

Lungs: dullness right lower zone; normal breath sounds

Heart: apex beat not displaced, not enlarged on percussion; heart sounds S1 S2, no pericardial rub

Abdomen: tenderness right upper quadrant, liver enlarged 3 cm, tender, smooth surface, sharp edge.

Spleen not palpable.

Extremities: no oedema.

Skin: in the anterior axillary line at the upper abdomen/ lower chest: swelling, redness and tenderness with peau d’orange appearance.

Laboratory results

ESR 60 mm/hr

Hb 8.1 mmol/L

TWC 13.3 x 109/L; differential count: 80% neutrophils

Platelet count: 173 x 109/L

Bilirubin 16 mmol/L

AST 14 U/L

ALT 23 U/L

Alkaline Phosphatase 110 U/L (n< 75)

Questions

1. What is the differential diagnosis?
2. What diagnostic procedures would you do?
3. What is the likely diagnosis?
4. What is the preferred treatment?

*(On the next page)*

Answers

1. Amoebic liver abscess, pyogenic liver abscess, cholecystitis, appendicitis.
2. Blood cultures (*these were* *negative*), rapid diagnostic test and blood film for malaria (*negative*). Stool examination for parasites and eggs (*showed E. histiolytica* cysts).

The chest x-ray showed a raised hemidiaphragm with clear lung fields (the normal breath sounds already suggested that there was no intrapulmonary problem).

An ultrasound examination showed four liver abscesses (Figure). A serological test for amoebiasis was positive.

1. Amoebic liver abscess with extension to the skin and right hemidiaphragm leading to shoulder pain.
2. A tissue amoebicidal drug – tinidazole or metronidazole followed by a contact amoebicidal drug – paromomycin or diloxanide furoate.

Discussion

Amoebiasis has a world-wide distribution and it is estimated that 10% of the world population is infected with the causative protozoal agent *Entamoeba (E.) histolytica*. Most people are asymptomatic (up to 90%). The transmission is faecal-oral and hence it is most common in unhygienic conditions. The most clinical manifestation is amoebic dysentery that is characterized by slow onset bloody and mucoid diarrhoea with abdominal pain; fever is not a prominent feature but sometimes there may be mildly raised temperature.

Only 10% of *Entamoeba histolytica* parasites are potentially invasive from the gastrointestinal tract. Their microscopic appearance is identical to the non-pathogenic *Entamoeba dispar*. When invasive, (*extra-intestinal amoebiasis*) the liver most commonly becomes infected through the portal vein. A liver abscess may develop that may be single of multiple; large abscess may become confluent. Clinically, the patient has fever, chills, right upper quadrant pain with right or left shoulder pain through irritation of the diaphragm depending on the localization in the liver. Over time anaemia and weight loss may also occur. A superficial abscess in the right liver lobe may irritate the overlying skin with subsequent infiltration; this may indicate imminent rupture. From the liver the abscess may spread into the pleural or pericardial space, or metastasize to e.g. the brain.

Diagnosis requires the appropriate exposure in an endemic area, an ultrasound and a serological test such as the immunofluorescence test; the sensitivity is >95%, one week after onset. There is no need for an aspirate as the parasites are at the edge of the abscess and difficult to target by the needle. In addition, there is a risk of introducing secondary bacterial infection. The white cell count is typically raised as are the liver enzymes in particular alkaline phosphatase. The stool examination may or may not show *E. histolytica* cysts. A chest x-ray may show a raised hemidiaphragm with or without pleural effusion.

The treatment response is good and the clinical response (disappearance of fever), normalization of the ESR, white cell count and liver enzymes may be used as parameters for cure. On the ultrasound, the abscesses may disappear or persist.

Drainage may be indicated in large left lobe abscesses that potentially could perforate to the pericardium, or in severely ill patients with imminent rupture of the abscess or in case of unresponsiveness of drug treatment. Drainage is also indicated in case of an uncertain diagnosis, in particular with a differential diagnosis of pyogenic abscess where drainage is usually necessary.

It is important to eradicate the parasites in the gastrointestinal tract with a contact amoebicidal drug to avoid recurrence of the liver abscess.

Literature

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Figure. Ultrasound of the liver with arrows indicating at least 4 areas suspect for abscesses

