An Increasingly Growing Cyst of the Left Liver with Plenty of Small-Sized Nodules of the Cyst Lining Triggered by Chinese Clonorchiasis but Misdiagnosed as An Infectious Cystoadenocarcinoma: A Case Report

jiacheng li
Zhejiang Chinese Medical University

Zhong Jia (✉ jiazhong664181@163.com)
Hangzhou First People's Hospital

He-Shan Zhou
Hangzhou First People's Hospital

Research Article

Keywords: Clonorchis Sinensis, Computed tomography, Diagnosis, Infectious liver cyst, Treatment

Posted Date: April 5th, 2023

DOI: https://doi.org/10.21203/rs.3.rs-2712696/v1

License: © This work is licensed under a Creative Commons Attribution 4.0 International License. Read Full License
Abstract

Clonorchis Sinensis (CS), a trematode prevalent in East Asia, likes inhabiting the hepatobiliary tract, especially the left liver once mammal (a definitive host) such as human, cat, dog and pig accidentally eats raw or undercooked fresh water fish/shrimp contaminated by the encysted larval, this coonosis could result in bile stasis favoring bacterial growing. Liver cyst formation due to intrahepatic tract obstruction, and even cholangiocarcinoma transformation. However, liver cyst with plenty of nodules of cyst lining resulting from CS infection is seldom reported, and is easy to be misdiagnosed as cystadenoma or even cystadenocarcinoma especially in a big city without any epidemic parasite. Herein, we describe an unusual case of an infectious liver cyst with multiple nodules mimicking as cystadenocarcinoma. The patient was a 55-year-old man from China who complained of months of anorexia, malaise, and a few days of fever. Enhanced computed tomography (CT) of the abdomen revealed a huge cyst of left liver with plenty of nodules of cyst lining, containing a large amount of fine-tiny, high-dense contents and unclear cyst fluid. An infectious cystadenocarcinoma was surmized in combination with high blood neutrophilia, C-reactive protein (CRP), and high erythrocyte sedimentation rate (ESR), and high carcinoembryonic antigen (CEA) level in cyst fluid. Furthermore, no parasitic eggs in stool and left hepatobiliary tract by biopsy and drainage were observed under microscopy prior to surgery. The infectious cyst was well-controlled by 3 weeks of administration of antibiotics and continuitive drainage of cyst fluid until the inflammatory markers were back to normal and the cyst volume was no longer reduced, and then left hemihepatectomy with a close cyst was performed. unexpectedly, a final conclusion of CS associated with liver cyst and granulomas of cyst lining was made on postoperative pathology. Therefore, the patient proceeded to standard ukecide therapy (3 days of praziquantel oral intake). Due to large population mobility and eating habit of local resident in developing countries, people might become an infection resource that could be walkable around. Detail-oriented radiological characteristics of CS infection associated cyst formation would be favorable for early identification, in combination with typical symptoms and high CRP and ESR especially when no evidence of CS eggs or adult worm bodies are provided.

Introduction

China especially in its south and northeast is the major area of Chinese Clornorchiasis prevalence, and about 6,000,000 people with CS infection occur in China according an official survey in 2014-2016. people can develop symptoms after two to four weeks of Clonorchiasis infection. Adult worm of CS mainly inhabits along with the hepatobiliary tree particularly in the left liver of mammal, and can survive for 20-30 years generation to generation, causing serious damage to the liver. Therefore, early identification and early flukecidate drug intake play a crucial key to patients’ successful clinical outcomes. Sadly, positive result of CS eggs and worms is not always obtained whatever in stool, or bile, or bile duct biopsy. At this moment, some radiological characteristics and blood indicators might give a big hand to early diagnosis. Herein, we describe a middle-aged robust male from Hangzhou City in China who presented with fatigue and anorexia, and then was misdiagnosed as hepatic cystadenocarcinoma.
because of an increasingly increased liver cyst with plenty of nodules of cyst lining on CT scan. What on earth can we learn from this case?

**Case Report**

A healthy 55-year-old man who has been engage in guarding a tomb in Hangzhou city in China complained of 4 months of anorexia, malaise, and 3 days of fever, accompanied with occasional abdominal pain and diarrhea. He denied any relevant medical history except for an average experience of having eaten water-boiled fish while visiting a remote village near Ziyang city just about a month before the onset of his symptoms. It is said that Ziyang city is one of CS epidemic area in China, but no one know that at that moment. Apart from a low fever (38.1°C) and a palpable cystic mass in the epigastric abdomen, no other remarkable signs were found upon physical examination. Conventional laboratory testing only showed significantly increased serum CRP (198 mg/L, normal range: 0 ~ 8 mg/L), neutrophilia blood ESR (94 mm/h, normal range:0 ~ 15 mm/L), and severe hypoalbuminemia (26 g/L, normal range:40 ~ 55 g/L). Enhanced CT of the abdomen revealed ahuge cyst (approximately 20 cm in maximum diameter) of the left liver containing a large amount of fine-tiny, high-dense contents and unclear cyst fluid (Fig. 1a), with plenty of small-sized, partial enhanced nodules of the cyst lining (Fig. 1b). Fine-needle percutaneous transhepatic puncture cytologic biopsy of nodules of the cyst lining demonstrated necrotic inflammatory granulomas rather than caseous necrosis, with plenty of inflammatory cells infiltrating (Fig. 2). Ultrasoun-guided cyst decompression with a drainage tube placement was then immediatelly implemented (Fig. 3a), and released plenty of turbid, pus-like cyst fluid. However, amazingly, no any bacteria or parasitic eggs were isolated from cyst fluid samples. But cyst fluid analysis showed a high CEA level (100 ng/mL,normal range:0 ~ 5 ng/ml). An infectious cystadenocarcinoma was surmized. After 3 weeks of continuative drainage of cyst fluid and administration of antibiotics, the size of the cyst was markedly reduced to approximately Less than 30% of the initial size and no longer further reduced any more (Fig. 3b). Therefore, a left hemihepatectomy with a close cyst was successfully performed. Postoperative pathology unexpectedly demonstrated plenty of pink, sunflower-shaped, thick-shelled parasite worms and eggs (Fig. 4a, Giemsa's staining,100X) accumulated along with the fibrotic intrahepatic hepatobiliary tract of the left liver (Fig. 4b,HE staining,200X), with plenty of inflammatory necrotic granulomas of cyst lining (Fig. 4c,HE staining,200X). Additionally, the contents in cyst fluid were actually composed of the falling, calcifying tissue or parasitic fragments. The thick-shelled, sunflower seed-shaped adult worms were identified as Chinese CS by experienced pathologists and parasitologists. For this reason, the patient proceeded to orally intake a 3 days of flukecide agent (Praziquantel,210 mg/kg/d). The postoperative course was favorable, and he was discharged on postoperative day 9, with normalized blood CRP, ESR, and albumin level. At follow-up 3 months after surgery, he returned with full vitality and without any parasite relapse on CT scan during at least 2 years of follow-up.

**Discussion**
Cyst formations within the liver are a frequent finding among populations [1]. Among them, infectious liver cysts are predominantly of pyogenic bacterial, Amoebic, or Echinococcal origin [2]. However, Clonorchiasis associated with infectious liver cyst with multiple nodules of cyst lining is seldom described on images, and is also rarely reported in Hangzhou city (a non-parasitic epidemic area). However, we must remind people not to ignore any possibilities of parasite infection. CS, a trematode prevalent in East Asia especially in China that accounts for one third of total CS infection number. Exposure typically occurs through ingestion of raw or undercooked fresh water fish?shrimp containing the encysted larval form of the parasite [3]. As a matter of fact, other unhealthy behavior, for example, undesirably eating the cooked foods that are possibly contaminated by choking block, also transfers CS spreading. Mild infections with CS are usually asymptomatic, but patients with a heavy parasitic load (>20,000) can present with symptoms compatible with cholangitis, including jaundice, right upper quadrant abdominal pain, nausea, vomiting, anorexia, malaise, and fevers [4]. One mechanism includes mechanical injury related to damage to the bile duct mucosa feeding activities of the parasite, secondary local accumulation of worms results in bile stasis favoring bacterial growing, inflammation, and subsequently recurrent pyogenic cholangitis, cholelithiasis, cholecystitis, liver fibrosis, and even risk of cholangiocarcinoma evolution [5~7]. Backing to go through an online official survey from China in 2018, Ziyang city is a heavy epidemic area with this parasite.

Unfortunately, few surgeons paid enough attention to this point, and most physicians took it for granted that it was impossible to be infected by an average experience of eating fish. A diagnosis of hepatic Clonorchiasis could be easily made by identifying this parasitic worm or egg under a stool, bile, duodenum drainage fluid, or cyst fluid, or pathologic tissue microscopy. However, these results are often negative in real clinical practice. If so, diagnostic therapy with Tribendimidine or Praziquentel possibly improves the odds of positive results. Additionally, CT findings associated with Clonorchiasis could provide us with useful evidence for diagnosis as well as differential diagnosis [8]. In this case, plenty of parasites blocked the outflowing of bile, which caused cyst formation within the left liver. Similar to this case, the cyst might present two characteristic features on the CT scan, including a thickening cyst wall resulting from inflammation, fibrosis, and calcifying granulomas, and plenty of fine-tiny, high-dense contents composed of the falling calcifying tissues or parasitic fragments. Herein, we for the first time define the radiological characteristics as a 'sesame cake sign', which might be an important suggestive of the potential of CS infection. Also, we noticed the patient had an interesting higher CRP and higher ESR rather than peripheral increased neutrophilia and/or eosinophilia. It was thought to be a response to a heavy parasite load and chronic damage to bile ducts. Of note, the final diagnostic conclusion should depend on a comprehensive analysis based on an overall as well as detailed clinical data and a participation of multidisciplinary team, including parasitologist, pathologist, radiologist, and hepatologist. Also, keeping a great eating habit would be the first line of defence to avoid CS relapse.

Conclusion
Cyst formation within the liver is a common finding. Sesama cake sign on CT scan might be an important suggestive of chronic Clonorchiasis infection in combination with high blood CRP and ESR. Surgical resection of the fibrotic liver and then flukeicide therapy might be a curative way.

Declarations

Ethic statement:
There was no ethical request for this case.

Consent statement:
The patient had given his written informed consent for his data to be submitted or published.

Conflicts of Interest:
All authors declare that they have no conflicts of interest concerning this manuscript.

Authors’ Contributions:
Dr. Jia Zhong and postgraduate Jia-cheng Li designed and drafted the imaging article. Radiologist Zhou He-Shan provided the relevant CT data. Postgraduate student. All authors read and approved the final manuscript.

Funding: None

Acknowledgment: We really appreciated Miss Nisile Kakongoma, a native English speaker for her suggestion on language quality. We also appreciated Engineer Yong-Dong Cao who helped us with uplifting the quality of the CT picture in the manuscript.

References


Figures

Figure 1

CT of the abdomen at hospitalized admission revealed a huge cyst of the left liver containing a large amount of fine-tiny, high-dense contents and unclear cyst fluid (1a), with plenty of smajll-sized,partaially contrast enhanced nodules of the cyst lining (1b).
Figure 2

Fine-needle puncture biopsy of a nodule of the cystic wall demonstrated a necrotic, inflammatory granuloma, with no caseous necrosis (HE staining, 200 X).
Figure 3

Ultrasound-guided percutaneous transhepatic drainage tube was placed into the cystic cavity (3a), and the cyst volume was reduced over 70% of prior volume but no longer further reduce any more about 3 weeks later (3b).

Figure 4

Postoperative pathology demonstrated a large amount of pink, sunflower-shaped, thick-shelled parasitic worms and eggs (4a, Giemsa's staining, 100X) accumulated along with the fibrotic intrahepatic tract of the left liver (4b, HE staining, 200X), with plenty of inflammatory cells infiltration and necrotic granulomas (4c, HE staining, 200X).