Case Report

Is Laparoscopy Safe in the Presence of Simultaneous Appendiceal Mucocele and Liver Cystic Echinococcosis?

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ABSTRACT

Cystic echinococcosis (CE) is a disease that is endemic in our country and is caused by the contamination of eggs of the parasite Echinococcus granulosus. Appendiceal mucocele is an obstructive dilatation of the appendix as a result of intraluminal accumulation of mucoid material. We aimed to present a patient with simultaneous appendiceal mucocele and liver CE. A 55-year-old male patient presented to the emergency department with abdominal pain. In the radiological examinations of the patient, CE 2 lesion with a diameter of approximately 7x6cm in liver segment 7 and a lesion compatible with an appendiceal mucocele of approximately 4x4.5cm in the right lower quadrant were observed. The patient underwent laparoscopic partial cystectomy and laparoscopic appendectomy. The patient was discharged. In appropriate cases, laparoscopy can be safely performed simultaneously for appendiceal mucocele and liver CE.

Keywords: Liver cystic echinococcosis, appendiceal mucocele, laparoscopic surgery, appendectomy, partial cystectomy

INTRODUCTION

Cystic echinococcosis (CE) is a disease that is endemic in our country and is caused by the contamination of eggs of the parasite Echinococcus granulosus (1). The disease is caused by a cestode worm Echinococcus granulosus that lives in the small intestine of dogs and other canines as the definitive hosts. Eggs are discharged in the final host feces and when ingested by intermediate hosts such as sheep, liberate their larvae in the duodenum which penetrate...
the intestinal mucosa to enter portal circulation and then migrate and develop in different tissues (2). Although the disease is frequently seen in the Southeastern and Eastern Anatolia regions of our country, it continues to be an important health problem with its economic and public health dimensions (3). Cystic echinococcosis can affect almost all organs in the body, but it usually settles in the liver at a rate of 50-70%. The cyst is usually located in the right lobe of the liver and is single in 70-80% (3). Because CE grows very slowly, they remain asymptomatic for years. The preliminary diagnosis is usually made as a result of radiological examinations performed for other reasons. Right upper quadrant pain, jaundice, nausea, vomiting and abnormal liver function tests may be observed in symptomatic cases. Medical treatment (albendazole), percutaneous drainage and surgery are current treatment options in liver CE disease. In complicated cysts, surgery is still the best option (4).

It is an obstructive dilatation of the appendix caused by intraluminal accumulation of mucoid material. The incidence of appendiceal mucocele is 0.2-0.3%, and it is more common in women and people over 50 years of age (5).

**CASE**

A 55-year-old male patient presented to the emergency department with abdominal pain. The patient, who did not have any additional disease other than hypertension, had abdominal pain, mostly in the right upper and right lower quadrants. There was no previous history of surgery. On ultrasound, a lesion compatible with CE 2 (according to WHO classification-IWGE) CE was observed in Segment 7, approximately 7x6cm (A-P x transverse) in size, containing daughter vesicles and detache membrane. The patient did not know that he had cystic lesion in his liver. In the right lower quadrant, a thick-walled, oval-shaped cystic lesion with a dense content of approximately 4x4.5cm (A-Px transverse) was observed in the region corresponding to the appendix lodge. On computerized tomography (CT), a hypodense cystic appearance with a detache membrane was observed in segment 7 of the right lobe. In the right lower quadrant, a cystic appearance of approximately 4.7x4.4cm (A-P x transverse) in size was observed, with a smooth circumscribed circumferential contrast, at the level of the appendix, lateral to the psoas muscle. The patient underwent colonoscopy. No pathology was detected in colonoscopy. Indirect hemagglutination test for CE was positive (1/1280). The patient underwent laparoscopic partial cystectomy and laparoscopic appendectomy. In the operation, the abdomen was entered with a 10mm trocar from the epigastric subxiphoid region, the abdomen was entered with a 5mm trocar from the right lateral and a 5mm trocar from the left lateral.

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**Figure 1.** Appendiceal mucocele image on CT

**Figure 2.** Cystic echinococcosis lesion in liver on CT

During the exploration, a cystic lesion adhering to the diaphragm was observed at the junction of the liver segment 7-8. It was observed that the diameter of the appendix increased considerably (mucocele) in the lower right side, but an area of approximately 1cm close to the root of the appendix was intact. First, appendectomy was performed. A hemoclips was placed in the root. The mass, which was thought to be a mucocele with a diameter of approximately 5x5cm, was excised, and the sub-umbilical port site was partially enlarged with the aid of an endobag and taken out of the abdomen. Hypertonic saline-impregnated gauze pads were placed around the cystic lesion in the liver. The cyst wall was opened minimally and aspirated and the pressure was reduced. Afterwards, a patient with hypertonic saline was given and waited for 10 minutes. Content aspirated. Partial cystectomy was performed. Bile fistula was not observed. With the help
of endobag, gauze pads and daughter vesicle were taken out from the xiphoid located trocar. A rubber drain was placed in the cyst lodge and the operation was terminated. Shortness of breath was observed in the patient on the 3rd post-operative day. Minimal pleural fluid and atelectasis in the right hemithorax were observed in thorax CT. Medical treatment was applied for this. The patient was discharged on the 8th postoperative day. Medical treatment was given to the patient as albendazole 10mg/kg/day for at least 3 months.

DISCUSSION

Cystic echinococcosis is a parasitic infection caused by the parasite *Echinococcus granulosus*, which causes endemic diseases all over the world (6,7). The frequency of the disease was found to be 1.05% in our country, and approximately 2000 new cases are detected each year (8). CE is most frequently observed in the liver (6).

The diagnosis of CE is made by radiological methods (USG, CT, MRI). Following the USG classification developed by Gharbi et al. (9) in 1981, the World Health Organization Informal Echinococcus Working Group (WHO-IWGE) developed the universally applicable international standardized USG classification in 1994 (10). We used WHO-IWGE classification in our study. There are basically four treatment options: surgery, percutaneous technique, antiparasitic medical treatment and follow-up (wait and see) (8).

Among them, Puncture, Aspiration, Injection, and Reaspiration (PAIR) or laparoscopic surgery are effective methods that can be used safely in experienced hands in suitable patients, since they are less invasive during the pandemic period. In parallel to medical treatment with albendazole (ABZ), surgery and follow-up (wait and see) treatment options in selected cases are historically used in these diseases, various imaging-guided interventional procedures have recently emerged [drainage, stenting, or Puncture, aspiration, injection, and reaspiration (PAIR)]. These options open up a new range of therapeutic options. Consequently, diagnostic imaging and interventional expertise have brought interventional radiologists to the fore as important members of these multidisciplinary team. The interventional radiologist will need to evaluate parasite activity in both forms of the disease, to guide the choice of the appropriate therapy from among medical treatment, interventional radiology procedures and/or surgical treatment. Knowledge of the specific complications of the echinococcosis will also help interventional radiologists to discuss the appropriate treatment and management (11).

In this case we performed laparoscopic surgery since the patient has liver CE and appendiceal mucocele simultaneously. Laparoscopic liver cyst deroofing produces better outcomes with minimal invasion, less spillage, and even better postoperative outcomes and less hospital stay (12).

Mucocele of the appendix was first described by Rokitansky and is an obstructive dilatation of the appendix caused by intraluminal accumulation of mucoid material (13). The worst complication of mucocele is rupture resulting in pseudomyxoma peritonei (14). It is stated that laparoscopic approach and fine needle aspiration cytology should be avoided due to the risk of rupture. (15). Although USG, CT and colonoscopy are used for the diagnosis of appendiceal...
mucocele, the lesion is usually found incidentally during surgery (16). Surgical resection (appendectomy) is the preferred method in the treatment of benign mucocele [17]. Right hemicolectomy is recommended when there is an enlarged mesenteric lymph node, positive cytology, suspected malignant mucocele, or perforated (18). It has been stated by some authors that laparoscopic method can be performed safely and endobag should be used in appendiceal mucocele (19,20).

**CONCLUSION**

Despite the advances in diagnosis and treatment in recent years, hydatid disease, which still cannot be eradicated, is endemic in our country and causes a public health problem, disrupts human and animal health and causes economic losses.

Although appendiceal mucocele, which develops as a result of intralumenal accumulation of mucoid material, is detected incidentally, it causes pseudomyxoma peritonei when it ruptures. Laparoscopic surgery can be safely performed in experienced hands in the treatment of both diseases.

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**REFERENCES**