



(RESEARCH ARTICLE)



## Rare presentation of Liver hydatid cyst in the porta hepatics: Report five cases and review of literature

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### Abstract

Echinococcosis remains a significant health hazard in endemic areas, including the Middle East, Mediterranean countries, and Central Asia. The liver is the most common organ involved in the Hydatid Cyst (75%). Theoretically, any lobe could be involved. However, the right lobe is more common. The involvement of the liver dome or posterior segment (7th and 8th segment), and portahepatis has not been studied well. Humans are accidentally infected and do not have any role in the life cycle of hydatid cysts. The parasite may infest any body organ, with the liver and lungs being the most involved organs. portahepatis involvement by hydatid cyst is sporadic, with only seven cases published in the review of literature; we present two men, 56 and 62-year-old Persian males and two old females with RUQ pain and ultrasonography (US), computed tomography (CT) and magnetic resonance imaging (MRI) findings show hydatid disease of the liver with a compress of portal vein, hepatic artery, and CBD. Other organs were intact. Their laboratory tests show mild elevation of ALT, AST (98, 89 to 120 to 150 mg), bilirubin(2.5to3.5mg), and alkaline phosphatase (482 to 650mg). Other lab dates were in normal ranges. The patient underwent surgery with laparotomy. After calling the surgery site with the sponge and hypertonic saline, cysts were aspirated and evacuated, and the cavity was filled with omentum(omentoplasty). Hydatid disease is imposing a significant burden on healthcare systems, specifically in developing countries. Manifestations of the disease are often non-specific, while a subset of the infected population remains asymptomatic. Portohepatis obstruction and compressions are rare complications, and it is essential to distinguish other causes of obstruction. The management of these entities requires different approaches. Our approach was surgery with albendazole postoperative.

**Keywords:** *Echinococcus Granulosus*; Hydatid cyst; Portahepates hydatid cyst; Compression

### 1. Introduction

Hydatid disease is a serious health and infection problem in world especially in endemic countries (1, 2, 3). There are reports from several countries, which this disease is endemic in the Mediterranean region, Far East, South America, and Middle East such as Iran [1, 2, 3, 4]. It is a parasitic infection caused by the *Echinococcus granulosus* [1, 2]. Humans are accidental infected and do not have any role in the life cycle of hydatid cysts [2, 3, 4]. Humans are infected by eggs of this parasite from vegetable, soil or water which contaminated by the dogs feces [1, 2, 3, 4]. Hydatid cysts may involve all organ in the body but occur most frequently in the liver (50%–77%) and lungs (18%–35%), and occasionally in other

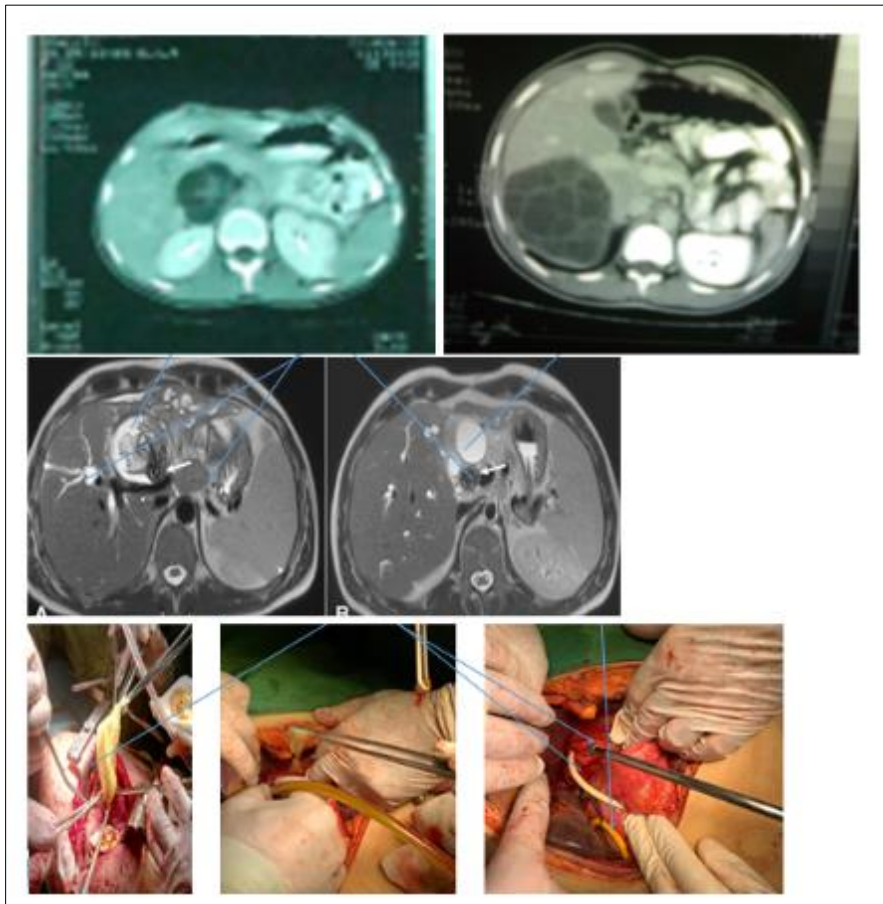
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organs [1, 2, 3, 4, 5, 6]. However, the right lobe is more common (2, 3). The involvement of liver dome or posterior segment (7th and 8th segment) and portahepatis has not been studied well (12). Concomitant liver and pulmonary hydatid cysts occur in 4% 25% of patients [1, 4]. Hydatid cyst may present as a chronic disease and asymptomatic (2, 3, 5) or may be found during routine clinical examination and serologic, radiographic, or ultrasonography for others problem [2, 3, 5, 6, 7, 9]. The clinical signs and symptoms of hydatid cysts depend on locations in the organs (deep or superficial, right and left lobe or portahepatis), size, adjacent organs, and complications such as infection or cyst rupture in the pritoneal cavity, intrabiliary, in the pleural or lung parachimal and rarely intra pericardial cavity or compression of portahepatis and bacterial infection (1, 2, 4, 5, 7, 8, 10). The presence of air forming an air fluid level inside the cyst on CT-scan, this finding indicate the infection of the cyst (11). The clinical status of the patient imagines finding will contribute to the final diagnosis in cases of infection of the cyst which present as a hepatic abscess (10-11). The compression and displacement of biliary ducts can frequently produce a spontaneous rupture in biliary ducts obstructive jaundice (7, 11)

A cyst may rupture into the biliary systems, Into the hollow organ, through the diaphragm into the pleural cavity or pulmonary parenchyma, or directly in the peritoneal cavity [4, 5, 6, 8, 12]. Rupture of the cyst may occur after trauma or spontaneously due to suddenly increased intracystic pressure or during treatment whit Albedasol [4, 6, 7, 8, 9]. A hydatid cyst rupturing into the peritoneal cavity or may cause some symptoms including abdominal pain, urticaria, anaphylaxis, and sudden death or shoulder pain due to irritation of diaphragm [7-8-9]. Presentation is usually dramatic with acute abdominal signs, such as guarding, rebound, and tenderness (1, 3, 5, 7, 8, 9). In this case series, we want to show clinical presentation, diagnosis, surgical approach, mortality, morbidity and recurrences of patient who had hydatid cyst in the potahepatis with complications.

## 2. Case presentation 1

A 42-year-old femail was referred to our clinic with liver cyst which found during because of RUQ pain fever, jaundice, nausea and vomiting.



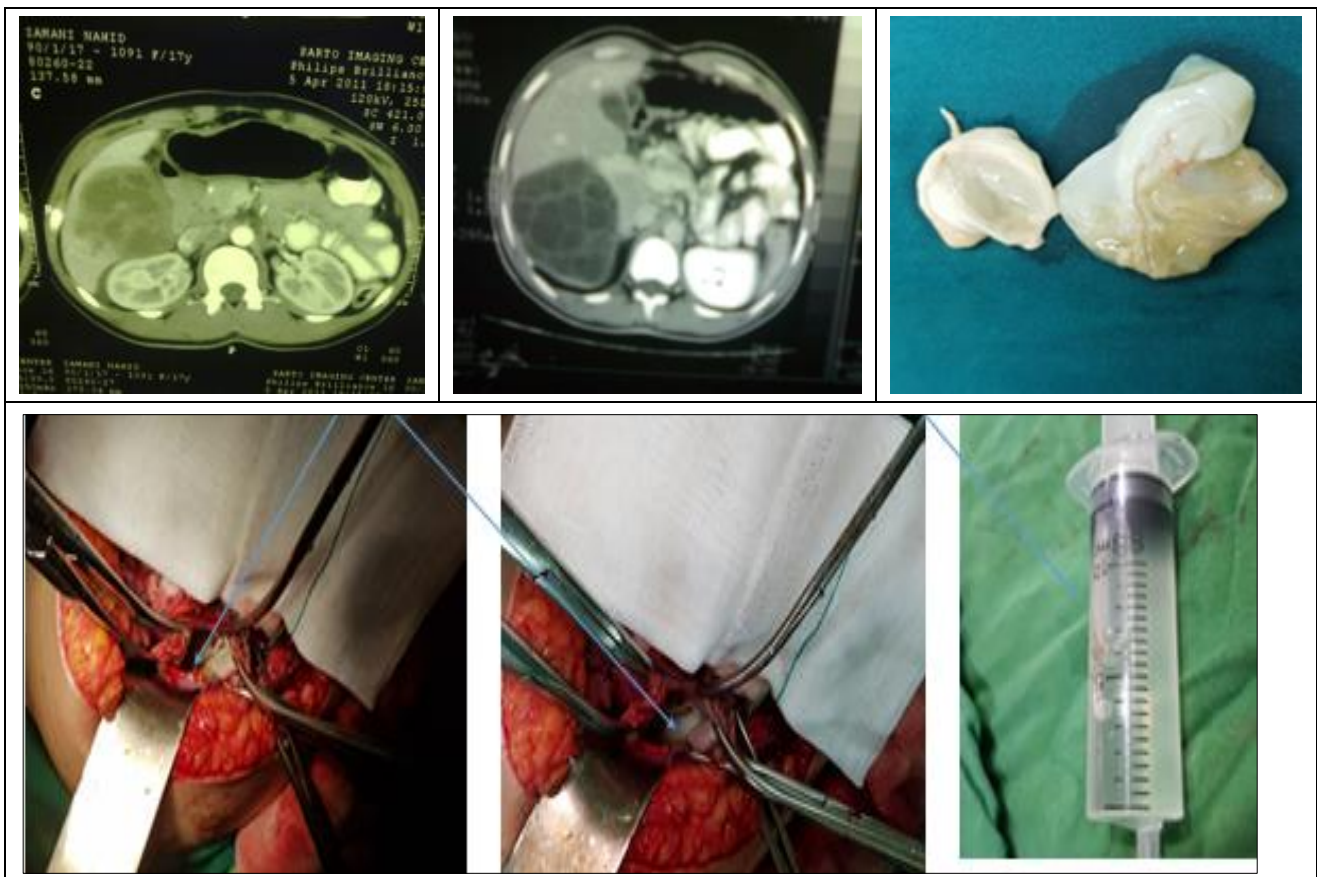
**Figure 1** Liver hydatid cyst

There was no history of pain, Physical examination show RUQ tenderness. Routine blood vestigation, liver function (ALT and =98mg and AST=86 mg-L), total bilobren(3mg-l Direct=2mg-L and indirect 1 mg-L, AKP=342mg-L) , WBC=12462 , HB=12mg-L and renal function tests were normal. Past medical history was non-significant. ultrasonography (US) Computed tomography of the abdomen showed cystic lesion with separation on the portohepatis which this finding of imaging indicate a very rare location site in liver hydatid cyst (Fig. 1). In MREP, porta hepatics as common bile duct was milled dilated, Intrahepatic bile ducts have a normal appearance. A multidisciplinary committee brought this case up, and they decided on one-week of Albendazole therapy followed by operative exploration with midline laparotomy for aspiration and evacuation of the cyst with mentoplasty and intracavity drainage. However, the patient was discharged due to not having consent to undergo surgery and is being followed up for a 6-month-long period and Albendazole therapy in this period.

### 3. Case presentation 2

A 52-year-old male was referred to our hospital with liver cyst porta hepatis , which was found because of RUQ pain , nausea, and vomiting.

There was no history of abdominal pain; *Physical examination showed* RUQ tenderness with deep compression. Routine blood examination, liver function (ALT and =48mg and AST=56 mg-L), total bilobren(2mg-l Direct=1.5mg-L and indirect.5 mg-L, AKP=142mg-L), WBC=8462, HB=12mg-L and renal function tests were routine. Past medical history was non-significant. ultrasonography (US) and Computed tomography of the abdomen showed a cystic lesion with separation on the porta hepatis. This imaging finding shows a scarce location of cysts in the liver (Fig.2). In MRCP, porta hepatics as common bile ducts were normal, and intrahepatic bile ducts had a normal appearance. After consultation, other colleagues decided on one week of prophylaxis with Albendazole therapy, followed by operative exploration with midline laparotomy for aspiration and evacuation of the cyst with mentoplasty, capitonnage carefully to the prevention of porta hepatis elements and external intracavity drainage. However, the patient was discharged four days postoperatively and is in good condition, followed up for a 6-month-long period and Albendazole therapy in three cycles of 28 days with 14 14-day inter wall.

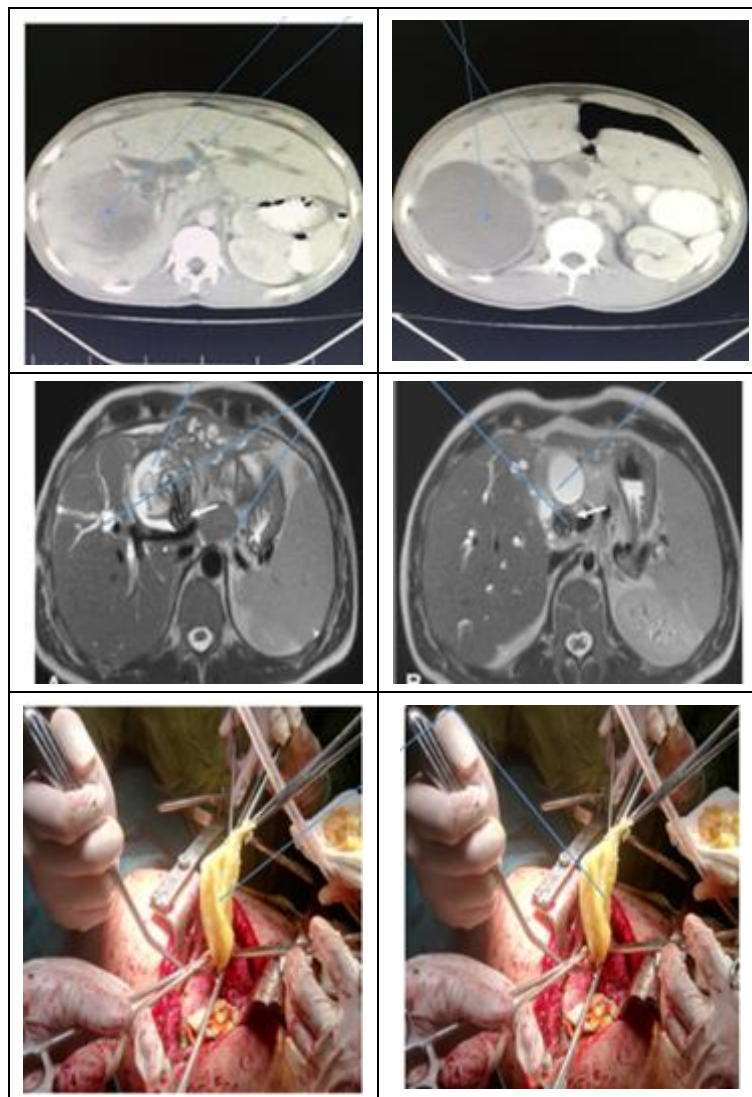


**Figure 2** CXR shows right side lung cyst

#### 4. Case presentation 3

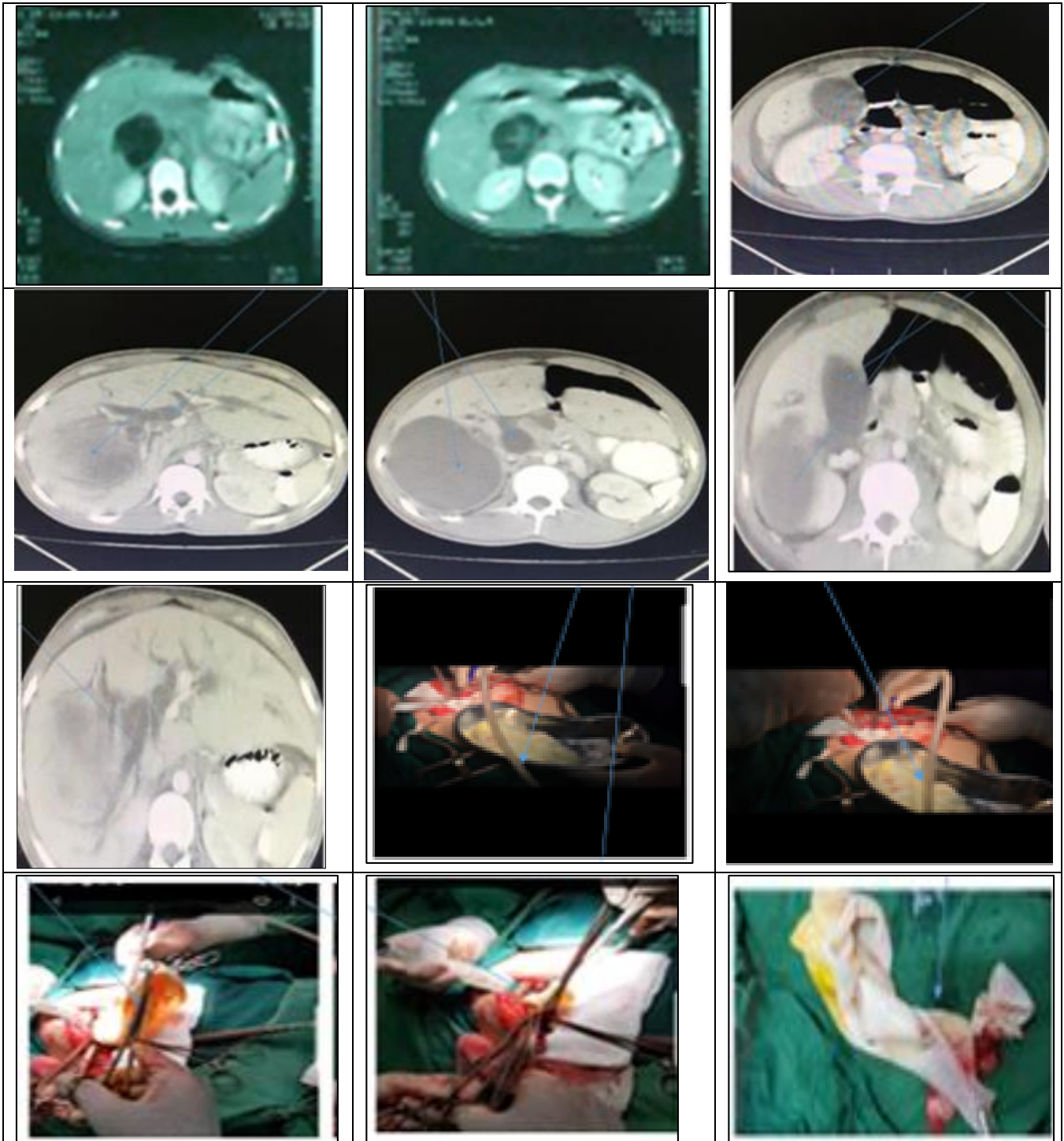
A 32-year-old female was referred to our thoracic surgery clinic with liver cyst because of RUQ pain, fever, jaundice, nausea and vomiting.

There was no medical problem in the patient's past history; Physical examination showed RUQ tenderness, fever =39 c, and sclera was yellow. Routine blood examination show liver function (ALT and =108mg and AST=122 mg-L), total bilobren(4mg-L, Direct=3mg-L, and indirect 1 mg-L, AKP=422mg-L) , WBC=462, HB=12mg-L, PT, PTT, INR, and renal function tests were normal. Past medical history was non-significant. ultrasonography (US) Computed tomography of the abdomen showed a cystic lesion with separation on the portohepatis, and imaging findings show a very rare location of hydatid cyst in the liver (Fig 3). In MREP, the porta hepatics element was dilated as the common bile and intrahepatic duct. This case was consulted with a gastroenterologist and infection department, and they decided to do surgery for decompression of the porta hepatic for evacuation of the cyst. Midline laparotomy was performed, and aspiration and evacuation of the cyst with omentoplasty and external drainage of intracavity was performed. However, the patient was discharged six days postoperative with 800 mg Albendazol daily for three cycles of 28 days with 14 days' rest. The patient followed up for a 6-month, and the condition was good.



**Figure 3** CXR shows right side lung cyst

### 5. Case presentation 4



**Figure 4** CT-scan show cystic lesions of Porto hepatitis

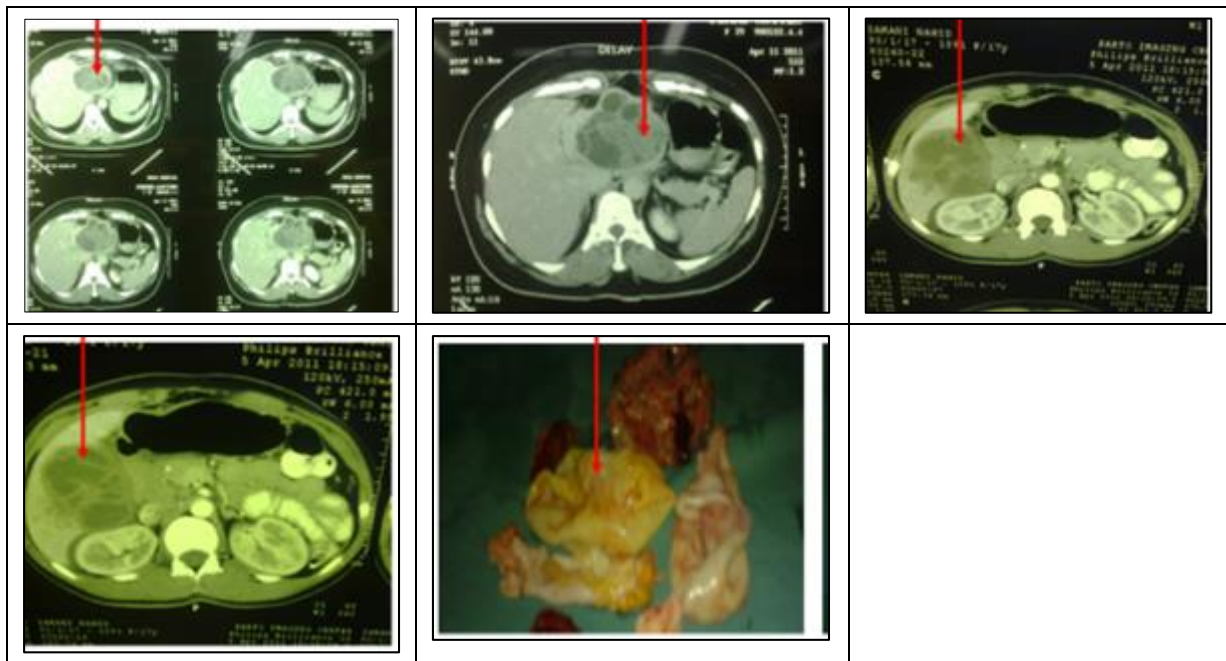
A 48-year-old male was referred to our thoracic surgery ward with hydatid cyst of liver because of epigastric pain, no appetite fever, nausea and vomiting. sclera icteric and urine was yellow. Past medical history and drug history was non-significant Past. Physical examination shows RUQ and epigastric tenderness, fever =38 c and sclera was yellow. Routine blood tests show, liver function (ALT and =98mg and AST=72 mg-L), total bilobren(3mg-L, Direct=1.8mg-L and indirect 1.2 mg-L, AKP=522mg-L) , WBC=11624 , HB=12mg-L, PT, PTT, INR and renal function tests were normal and urinalysis was positive for bilirubin. ultrasonography (US) Computed tomography of the abdomen showed cystic lesion with sepatation on the porta hepatic. Imaging finding show a very rare site of hydatid cyst in the liver (Fig. 4). In MRCP, show porta hepatics element as common bile duct and intrahepatic duct was dilated. This case was consulted with

gastroenterologist department and they recommended surgical approached for decompression of porta hepatic cyst by evacuation of cyst. Midline laparotomy was performed after vialling of the cyst with sponge wet with hypertonic saline, aspiration and evacuation of the cyst contains was performed and remnant cavity after evacuation was obliterated by omentoplasty and capitonage. patient was discharged on five day postoperative with 800 mg Albendasol daily for three cycle of 28 day with 14 day rest. Patient followed up for a 4 to 8-month the condition was good.

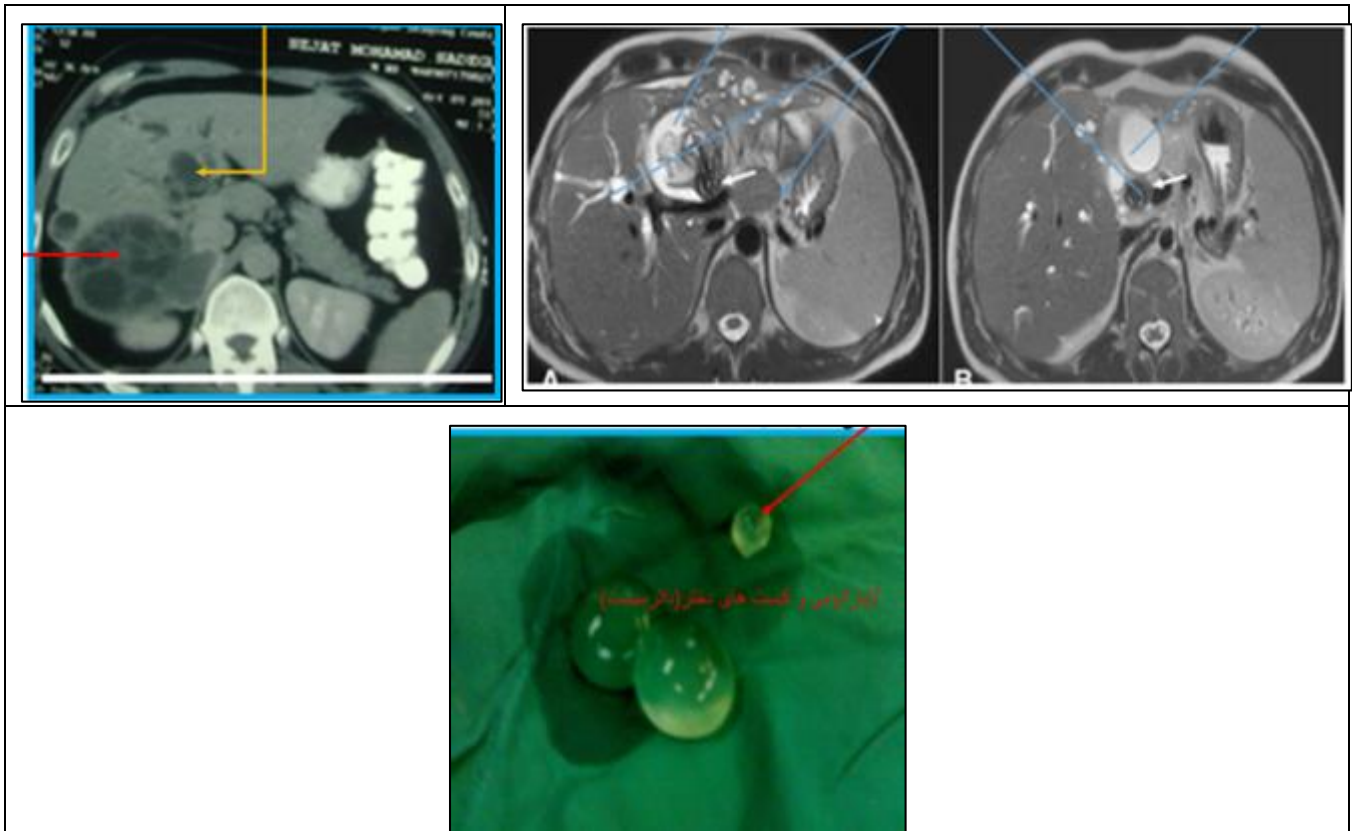
## 6. Case presentation 5

A 42-year-old male was referred to our clinic with a liver cyst because of RUQ pain, fever, jaundice, nausea, lethargy, and vomiting.

There was no medical problem in the past; Physical examination showed RUQ tenderness, fever =39 c, sclera, and urine were yellow. Routine blood examination shows liver function (ALT and =148mg and AST=142 mg-L), total bilobren(5mg-L, Direct=4mg-L, and indirect 1 mg-L, AKP=482mg-L), WBC=14620, HB=12mg-L, PT, PTT, INR, and renal function tests were normal. Past medical history was non-significant. ultrasonography (US) Computed tomography of the abdomen showed a cystic lesion with separation on the hill of the liver, which imaging findings show a very rare location of hydatid cyst in the liver (Fig. 5). In MREP, porta hepatics element, a common bile duct and intrahepatic duct was dilated. This case was consulted with a gastroenterologist and infection department, and they decided to do surgery for decompression of the porta hepatic for evacuation of the cyst. Midline laparotomy was performed, and aspiration and evacuation of the cyst with omentoplasty and external drainage of intracavity were performed (Fig 5). However, the patient was discharged six days postoperative with 800 mg Albendasol daily for three cycles of 28 days with 14 days rest. The patient followed up for a 6-month, the condition was good.



**Figure 5** CT-scan shows cystic lesions of Porto hepatitis



**Figure 5** Laminated membrane and daughter cysts

## 7. Discussion

Hydatid disease is a severe health and infection problem in endemic countries (1, 2, 3, 4). Although reported from several countries, the disease is endemic in the Mediterranean, Far East, South America, and Middle East, such as Iran [1, 2, 3]. It is a parasitic infection caused by the larval stage of *Echinococcus Granulosus* [1-3]. It is caused by the larval stage of *Echinococcus Granulosus* [1-8]. Dogs are the definitive hosts; humans are involved incidentally and cannot transmit these diseases (2-4). Humans become hosts accidentally by ingestion of contaminated foods, and then ova of *E. Granulosus* are released within the duodenum and upper part of the jejunum. Concomitant liver and pulmonary hydatid cysts occur in 4% to 25% of patients with hydatid disease [1, 8]. Complications occur in 5% to 40% of patients with liver hydatid cysts and include cyst rupture into the biliary tree, compression of the biliary duct (porta hepatic element), cyst infection, allergy and anaphylactic reactions and intraperitoneal rupture, a rupture in the pleural cavity and pulmonary parenchymal [1, 33, 4, 12]. In our cases liver hydatid cysts location was in the porta hepatic and compress CBD, hepatic artery and portal vein; this complication is infrequent in the literature review. The rupture of a liver hydatid cyst into the peritoneal cavity ranges from 1% to 16% [1, 2, 3, 4, 5, 8, 10]. Rupture may result from trauma or may occur spontaneously during treatment with albendazole [3-6, 9]. The risk factors predisposing to rupture include young age, cyst diameter >10 cm, superficial cyst location, large cyst diameter, which increases the internal cyst pressure and superficial location of the cyst are prone to rupture, even with minor trauma [4-6, 8, 10]. This rarity in this location of cyst in the porta hepatic can compress, and elevation pressure within the porta hepatic system (13). The complication of this location of liver hydatid cyst is very uncommon and to our knowledge, this specific involvement in the review of the literature was rare. In Spanish literature, there was uncommon (16). In our papers in journals, this event is very rare (1, 2, 5, 6, 7, 8). Liver hydatid cyst can produce severe complications and include: cyst rupture in biliary system, pleural space, pulmonary parenchymal and in the peritoneal cavity, widespread infections, (16, 17) We report all of above complications in the journals but we don't report porta hepatic cases (1, 3, 4, 8) Diagnosed tools are US, CT -scan and in rare case MRCP (1, 2, 3, 4). Treatment options for the of these cysts include surgical resection, medical treatment (Albendazole) [1, 2, 3, , 1216, 17, 18], All of our four case undergoing surgery with good results and complication. Our approaches were midline laparotomy, aspiration, evacuation and cartonnage, and external drainage.

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## 8. Conclusion

compression of the porta hepatic by hydatid cysts is a rare complication. However, the diagnosis and management of this complications not defined. US, CT-scan, M RI and MRCP can help the diagnosis Managing of this complication is surgery necessitates and need best approach to prevent to damage porta hepatic element as portal vein, CBD and hepatic artery intraoperative during aspiration, evacuation and capitinnage.

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## Compliance with ethical standards

### *Acknowledgments*

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### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of ethical approval*

The study was performed in accordance with the declaration of Helsinki and approved by the Ethics Committee of Local Ethical Committee of Arya private hospital. Iran, Rasht, Guilan, Tel=+981333759790-9

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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