

## Minimally invasive management of isolated renal cystic echinococcosis

*Minimal invaziv yöntemlerle tedavi edilen izole renal kist hidatik*

Taha Numan Yıkılmaz, Erman Damar, Erdem Öztürk, Eşref Oğuz Güven, Halil Başar

Dr. Abdurrahman Yurtaslan Ankara Onkoloji Eğitim ve Araştırma Hastanesi

*Geliş tarihi (Submitted): 16.06.2016*

*Kabul tarihi (Accepted): 03.08.2016*

### Yazışma / Correspondence

Taha Numan Yıkılmaz, MD.

Department of Urology, Ankara Dr. Abdurrahman Yurtaslan Oncology Training and Research Hospital, Mehmet Akif Ersoy District 13.St. No:56, Yenimahalle, 06200, Ankara, Turkey

Phone: +90 312 336 0909

Fax: +90 312 334 0352

E-mail: numanyikilmaz@gmail.com

### Özet

Kist hidatik Ekinokokusa bağlı gelişen paraziter bir enfeksiyondur. Sıklıkla karaciğerde (%75) ve akciğerlerde (%15) görülürken, böbrek tutulumu oldukça nadirdir ve olguların %2'sinde görülmektedir. Hidatikler medikal, cerrahi ve perkütan tedavi yöntemleriyle tedavi olabilmektedir. En sık uygulanan minimal invaziv tedavi yöntemi PAIR (perkütan aspirasyon, enjeksiyon, yeniden aspirasyondur).

**Anahtar Kelimeler:** kist hidatik, böbrek kisti, minimal invaziv, PAIR, Ekinokokus

### Abstract

Hydatid cyst is a parasitic infection which is caused by Echinococcus. Hydatid cysts are mostly evident in the liver (75%) and lungs (15%), while renal involvement is rare, comprising only 2% of all cases. Hydatidosis can be treated by medical, surgical and percutaneous modalities. The most performed minimally invasive technique is PAIR (percutaneous aspiration, injection, re-aspiration).

**Keywords:** cyst hidatic, renal cyst, minimally invasive, PAIR, Echinococcus

## Introduction

Hydatid cyst is a parasitic infection which is caused by *Echinococcus*. Even though *Echinococcus granulosus* is the most common etiological type, rarely other types may also cause the disease [1]. The disease is endemic in Middle East, South Africa, Mediterranean, Turkey [2]. It is related to close contact with dogs, sheep and cattle. While dogs are main host, humans are intermediate hosts for hydatid cysts. The eggs hatch in the intestine, penetrate the intestinal wall, and by the hematogen and lymphatic ways they reach organs where they develop into a hydatid cyst [1].

Hydatid cysts are mostly evident in the liver (75%) and lungs (15%), while renal involvement is rare, comprising only 2% of all cases [3]. Symptoms are often absent so diagnosis is difficult. Radiological evaluation and immunological test are used for diagnosis.

Hydatidosis can be treated by medical, surgical and percutaneous modalities. Because medical therapy is not so effective, surgery remains the principal mode of treatment for patients who are acceptable candidates [3].

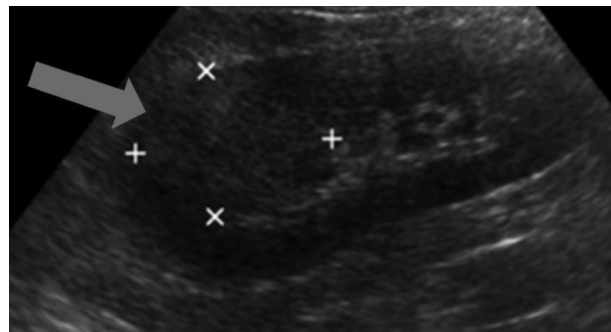
## Case Report

This 36-year-old woman was admitted to the hospital, with non-specific left flank pain of around 4 months duration. She has no concomitant disease or operation history. During this period, she developed intermittent fever (temperature, 38.0°C-39.5°C) and lost 8 kg weight. The patient recounted a history of having a dog for 5 years. In her medical examination hepatosplenomegaly was detected, other systems were normal. Investigations included blood and urine analysis, which were also normal. Ultrasonography revealed a 67x47 mm cystic lesion in the lower pole of left kidney with heterogenous inner structure. The CT scan also confirmed a 70x65 mm cystic lesion in the left kidney having a thick wall, 25-35 HU enhanced. The cyst has a germinative membrane in the central and reported as type 2 hidatid cyst (Figure 1). There were no lesions in liver and lungs. Indirect hemagglutination test was also confirmed the diagnosis with 1/1280 titration positivity.

The patient received 400 mg. albendazole twice a day. The symptoms regressed, control USG showed that the dimensions of the cyst is persistent. Cyst excision suggested but patient refused the surgical treatment. Ac-



**Figure 1:** 70x65 mm cyst hydatid with germinative membranes at left kidney lower pole.



**Figure 2:** Controlled USG image

ording to the patients decision; under sedoanalgesia ultrasound guided aspiration of the kidney hydatid cyst was performed with 20 gauge disposable lumbar puncture needles followed by ablation with 99.5% alcohol for a contact time of 20 minutes. Then percutaneous drainage catheter placed into the cyst. All the procedure performed on the operation room because of the risk of anafatic reaction. The catheter was removed after 2 days when drainage decreased to less than 20 ml. daily. The patient discharged with 400 mg oral albendazole twice a day. Also aspiration material confirmed hydatid cyst. At 6-month follow up USG confirmed effectively ablated hydatid cysts (Figure 2).

## Discussion

Cystic hydatid disease is a parasitic infestation caused by *E. Granulosus*, *E. Multilocularis*, *E. Vogeli* and *E. Oligartus* [1]. It is endemic in developing countries which engage in animal husbandry [2]. Incidence in endemic countries such as Turkey and India is 3,4-200/1000000 [4].

**Table 1:** Classification of hydatid cyst

CL	Unilocular, cystic lesion(s) with uniform anechoic content, not clearly delimited by an hyperechoic rim
CE1	Unilocular, simple cyst with uniform anechoic content. Cyst may exhibit fine echoes due to shifting of brood capsules which is often called hydatid sand
CE2	Multivesicular, multiseptated cysts; cysts septations produce 'wheel-like' structures, and presence of daughter cysts is indicated by 'rosette-like' or 'honeycomb-like' structures. Daughter cysts may partly or completely fill the unilocular mother cyst
CE3	Unilocular cyst which may contain daughter cysts. Anechoic content with detachment of laminated membrane from the cyst wall visible as floating membrane or as 'waterlily sign' which is indicative of wavy membranes floating on top of remaining cyst fluid
CE4	Heterogenous hypoechoic or hyperechoic degenerative contents. No daughter cysts. Cysts may show a 'ball of wool' sign which is indicative of degenerating membranes
CE5	Cysts characterised by thick calcified wall which is archshaped, producing a cone shaped shadow. Degree of calcification varies from partial to complete

Life cycle of parasite starts with contamination of foods by parasite egg. Humans are infected through ingestion of parasite eggs in contaminated food, water, soil or through direct contact with animal hosts. Parasites penetrate the intestinal wall and migrates through the circulatory system into various organs, especially the liver and lungs [5].

Hydatid cysts are mostly evident in the liver (75%) and lungs (15%), while muscle, kidney, bone, brain and spleen involvements may also be seen. Isolate renal involvement is rare, comprising only 2% of all cases [3].

The symptoms are usually nonspecific. Hydatid cyst often has a suggestive clinical presentation: Palpable cyst, flank pain, fever and hydaturia. The most seen symptom is flank pain [6].

Echinococcal cysts grow slowly. The wall of a mature cyst consists of three layers: the pericyst, derived from host fibrous tissue; the intermediate laminated membrane; and the inner, germinal layer which produces daughter cysts. Daughter cysts will be seen in urine in case of communication of the hydatid cyst with the renal collecting system. This is hydaturia and patognomonic for diagnosis but can be seen in only 5-10% of cases [3].

Hydaturia wasn't detected in our cases and our cases admitted with fever and flank pain. Because of the asymptomatic clinic the diagnosis is difficult. Differential diagnosis is especially involved with Bosniak cysts. Laboratory and serological tests will be helpful but high false positivity and false negativity rates makes them unreliable [6]. Ultrasonography, CT, and magnetic resonance imaging (MRI) have been used to diagnose abdominal

hydatid cysts, but USG is considered the primary imaging modality for the classification of different types of appearances. Sonography will demonstrate daughter cysts and well defined cysts, which may be single on multiple, uni- or multiloculated, thin or thick walled with mobile membranes [7]. Sonography is inadequate in diagnosis of complex cysts. Computer tomography and MRI scans provide more information than ultrasonography: detailed information about the location, diamentions, calcification, water matter, heterogeneity of content and relations between other organs [7,8].

Garbi et al. classified the hydatid cyst into 5 groups according to USG findings. This classification modified in 2001 by World Health Organization- Informal Working Group Echinococcosis (WHO-IWGE) (Table 1).

According to this classification the treatment of cyst divided in to three groups: CE1 and CE2 are active cysts and intervention is needed; CE3 is transitional zone; CE4 and CE5 are inactive cysts and no interventional is needed. Our cases were CE2 cysts.

Surgery has the potential to cure completely the patient, because of that surgery (total or partial nephrectomy) remains the main stay of treating renal hydatid cysts. Main goal of surgery is excising the whole cyst with its intents without rupture which will cause recurrence and anaflectic reaction [8]. Albendazol 2x400 mg is suggested 1-2 weeks before and 1 month after all surgical treatments. Other treatment options are medical treatment and minimally invasive procedures (PAIR, PAIRD) [9].

Our case didn't agreed surgical treatment. She received Albendazol 2x400 mg for 15 days. After than mini-

minimally invasive procedures applied.

Minimally invasive treatments can be performed in cases which have high risk for surgery and in cases which refuse the surgical treatment. However, the biggest problem in patients treated with minimally invasive ways are recurrence. The most performed technique is PAIR (percutaneous aspiration, injection, re-aspiration). This technique is suitable for CE1, CE2 and CE3 hydatid cysts. If a catheter replaced into the cyst after PAIR is called PAIR-D [9].

#### Conclusion

Renal involvement of hydatid cyst is rare. In this cases the treatment is still unclear. Minimally invasive procedures combined with medical treatment is a option for isolated renal cyst treatment in selected cases. More randomized controlled studies is needed for determining the gold standart treatment method in hydatid cysts.

#### References

1. Tsaroucha AK, Polychianidis AC, Lyrantzopoulos N, Pitiakoudis MS, Karayiannakis A, Manolas KJ et al. Hydatid disease of the abdomen and other locations World J Surg 2005;29:1161-5.
2. Gogus C, Safak M, Baltaci S, Turkolmez K. Isolated renal hydadtosis: experience with 20 cases. J Urol 2003;169:186-9.
3. Raxieti M, Mutaly A, Azhati B, Wang W, Yong H, Sheyheidin I, et al. Diagnosis and surgical treatment of renal hydatid disease; A retrospective analysis of 30 cases. PLoS One 2014;9:e96602.
4. Silher SJ, Moyad RA. Renal echinococcus. J Urol 1972;108:669-72.
5. Yildirim M, Erken N, Vardar E. Hydatid cysts with unusual localization: Diagnostic and treatment dilemmas for surgeons. Ann Trop Med Parasitol 2006;100:137-42.
6. Fekak H, Bennani S, Rabii R, Mezzoni MH, Debbagh A, Joual A et al. Hydatid kidney cysts: 90 case reports. Ann Urol 2003;37:85-9.
7. Turgut AT, Akkoz O, Bhatt S. Sonographic spectrum of hydatid disease. Ultrasound Q 2008;24:17-29 .
8. Wang Y, Zhang X, Bartholomot B, Liu B, Luo J, Li T et al. Classification, follow-up and recurrence of hepatic cystic echinococcosis using ultrasound images. Trans R Soc Trop Med Hyg 2003;97:203-11.
9. Gabal AM, Khawaja FI, Mohammad GA. Modified PAIR technique for percutaneous treatment of high-risk hydatid cysts. Cardiovasc Intervent Radiol 2005;28:200-8.