Our Results in Surgical Treatment of Hydatid Cyst of the Lungs

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ABSTRACT
INTRODUCTION: The cases of pulmonary hydatid cysts are frequently seen especially in Eastern Region because the living source is stock-breeding. We aimed to discuss 16 patients operated with the diagnosis of pulmonary hydatid cyst in a year period.

METHOD: 16 patients were diagnosed with hydatid cyst clinically and radiologically between April 2009 and July 2010. Their ages ranged between 4-65 years with the mean age of 23 years. Thoracotomy was performed to all patients.

RESULTS: Cyst localization was unilateral in 10 and bilateral in 6 of them. 1 patient had also cyst in the liver. Cyst was perforated in 12.5% of the patients. Enucleation was applied in 4 patients, cystectomy in 2 patients and 'cystotomy and capitonnage' was applied to the remaining. In bilateral cases, operation was applied to the other side after one month of the first operation. In these cases and in the presence of multiple cysts, albendazole treatment was applied. Lower lobectomy (left) was performed in 1 cases. No mortality or recurrence was observed.

CONCLUSION: Cystotomy+capitonnage is still the most valid surgical method in pulmonary hydatid cyst cases because it is a method preserving the parenchyma.

KEYWORDS: Hydatid cyst, cystotomy, capitonnage.

INTRODUCTION
Hydatid cyst is a parasitic infestation caused by echinococcal cestodes. It is an important health problem in societies where agriculture and livestock raising is common, but veterinary services, public health and preventive efforts are insufficient. Especially in the Eastern parts of Turkey where people earn their living by raising livestock, hydatid cyst of the lungs are common. Echinococcus granulosus is the most common cause of hydatid cysts. Intermediate hosts for echinococcus granulosus are sheep, goat, cattle, swine, deer, and human, while definitive hosts are dogs, wolves, jackals, and hyenas. The protective membrane of the eggs ingested by an intermediate host is dissolved by digestive enzymes. Embryo passes through mesenteric venules and enters the portal circulation. If the embryo is not kept by the liver, it is carried to the lungs. It is most frequently located in the right lung, and lower lobes of both lungs. Diagnosis in hydatid disease of the lungs is made by history, physical findings, and radiological evaluations. Serological investigations have a limited value in diagnosis of hydatid cyst of the lung. When located in the lungs, it can reach a certain size without causing any symptom. Symptoms are related with size, localization, pressure on surrounding tissues, and rupture of the cyst. Common complaints are dry cough, hemoptysis, blunt abdominal pain, and feeling of pressure in the thorax. Massive hemoptysis is rarely observed in centrally localized cysts.

The cyst is identified in x-ray as a round or oval homogenous opacity that can be differentiated from pulmonary parenchyma. Air between pericyst and cyst membrane is referred to as the crescent sign and this means the cyst is about to rupture. An air-fluid level with collapsed membrane is referred to as the "water lilly sign". Hydatid cyst disease is treated by surgery, percutaneous drainage, or medically. Percutaneou...
cyst drainage is a good alternative in selected patients with liver cysts\(^3,4\). The most important option for medical treatment of hydatid cyst is benzimidazoles\(^6\). In the surgical treatment, cystotomy-capitonnage and pulmonary resection are performed in cases with pulmonary destruction\(^2\). Between April 2009 and July 2010, 16 patients who were admitted to our hospital with a diagnosis of hydatid cyst of the lungs were evaluated and studied.

**METHODE**

In this study, 16 patients, 13 male and 3 female, who presented to our hospital in 1yr period 2066-67 and were diagnosed to have pulmonary hydatid cysts by clinical and radiological findings, were evaluated. The mean age of the patients was 23(4-65). 2 cysts were perforated and 14 were intact. Thoracotomy was performed in all patients. Cystotomy, germinative membrane excision, bronchial closure, and capitonnage were performed. In non-perforated cases, the cysts were enucleated in toto. After cyst excision and capitonnage, lungs were ventilated and air leak checked and was controlled with 3-0 proline suture. In one case where parenchymal destruction was observed and nearly the whole lobe was involved, resection was done. All the cases received per-operative and post-operative antibiotic treatment.

**RESULTS**

The most common finding was blunt chest pain in 68-75% of our patients. There was a giant cyst in a case with massive hemoptyosis. In one patient with giant cysts, the whole lobe was observed to be destroyed. Of cysts, 18.75% (3) were found incidentally in chest x-rays taken for other problems. Cyst localization was unilateral in 10 cases (62.5%) and bilateral in 6 cases (37.5%). In one case (6.25%), liver cysts accompanied lung cysts. Cysts were most commonly situated in the right lower lobe (50%). Radiological findings were giant cysts (over 10 cm) in 2 cases, crescent sign in 2 cases, and water lily sign in 6 patients. Four patients had undergone enucleation, two had cystectomies, and others had cystotomy and capitonnage. In bilateral cases, the other side was operated one month later after the first operation. Thoracoabdominal approach was performed in 1 case where liver cyst accompanied lung cyst. These cases and those with multiple cysts received albendazole therapy. One case had lobectomy for lower lobes (left). No mortality and recurrence was observed. One patient had prolonged air leak, and empyema developed in the postoperative period. No mortality was observed. The mean length of hospital stay was seven days and no recurrence was observed in follow-up period.

**DISCUSSIONS**

The most common localization of hydatid cyst is the liver with 50-60% and secondly the lungs (10-30%)\(^1\). In one case (6.25%), the disease involved the liver as well as the lungs.

Complicated hydatid cyst, especially if ruptured into the pleura, is hard to diagnose. Diagnosis usually made when hydatid materials (membrane particles) were seen in the drainage tube and surgical intervention was performed in case of air leak. Hydatid cyst should receive treatment as soon as diagnosis is established, since it may cause serious complications by means of rupture into bronchi and pleural cavity or vital organ compression\(^14\). Surgical treatment should be preferred in hydatid cysts of the lung (4,8,9,14,15). Medical treatment is indicated in uncomplicated small cysts, in patients with high risk for surgery, and patients reluctant to undergo surgery\(^5\). Surgical treatment may be planned in a different way for giant cysts\(^12\). Lung tissue should be preserved and resection should be avoided wherever it is possible. Recurrence is very low. Although we had a parenchyma preserving approach, no recurrences were observed in our series. Resection is not recommended unless whole lobe is destroyed, but for giant hydatid cysts, tissue preservation is not always possible\(^5\). The main aim of surgery in hydatid cysts is total excision\(^5,10,14\). Shields stated that lobectomy should be performed in cases where more than half of the lobe is involved\(^1\). No complication except for prolonged expansion defect was observed. Hydatid cyst surgery is uncomplicated; mortality and morbidity is extremely low\(^5,9,14\). Giant cysts have 5% higher morbidity than simple cysts (8). Prolonged air leak, empyema, sterile air space, and pneumonia are frequently observed\(^9,10,12,15\). One patient (6.25%) in our series had air leaks continuing for more than 10 days but controlled spontaneously. One of them had pneumonia. Image-guided percutaneous drainage for liver cysts has shown good results\(^1\). When they lose their vitality,
liver hydatid cysts become calcified and are restricted by the body. However, trying to enucleate hydatid cysts of the lungs and applying some agents in order to kill the cysts are very risky and yield unsuccessful results. During the intervention, anaphylaxis, asphyxia and pleural perforation (hydropneumothorax) may be observed. Devitalizing the cysts without removing germinative membranes is not sufficient for the treatment of hydatid cysts of lungs. On the contrary, it provides a ground for complications. In our series no complications or recurrence was observed in one year follow-up period.

Intact cysts have minimal symptoms or are usually asymptomatic. Perforated cysts are almost always symptomatic. In our observations complication rates for ruptured hydatid cysts were high. Those with high fever received antibiotics, analgesics, and antipyretic agents before and after the operation. Postoperative antibiotic treatment continued 7 days. In concordance with our results, some authors preferred resection for complicated cysts and postoperative complication rates were high. In the pediatric age, cysts overcome the low pressures in the lungs and result in expansion and tension pneumothorax, thus causing rapid cyst enlargement. Early surgery may prevent cyst complications. No mortality were observed in the per operative and postoperative period.

In conclusion, a parenchyma preserving cystotomy along with capitonnage is still a valid surgical method for hydatid cysts of the lungs.

REFERENCES