

Echinococcosis: an Occupational Disease

M Farahmand,¹ M Yadollahi²

Abstract

Hydatidosis is a common infestation caused by *Echinococcus* spp. Solitary hydatid cyst of the lung is not uncommon but coexistence of two or more pulmonary cysts are less common. These cysts may drain into the bronchial tree or very rarely into the pleural cavity which causes a poor outcome. Certain people such as slaughters, tanners, stockbreeders, shepherds, butchers, veterinarians and all whose job makes them to work closely with animals are at higher risk of the infection and developing echinococcosis. Herein, we present a 14-year-old shepherd who developed severe chest pain and hydropneumothorax following a minor trauma to his chest. He had two pulmonary hydatid cysts, one of which drained to the left pleural cavity and caused the symptoms. Another cyst was complicated during his hospital course. The patient was treated surgically, received albendazole and discharged home uneventfully. A high index of suspicion is of utmost importance for the correct diagnosis and treatment of hydatid disease in hyperendemic areas and in those whose occupation might put them at a higher risk of contraction of hydatid disease.

Keywords

Echinococcosis; pulmonary; Pleural Disease; Cestoda; *Echinococcus granulosus*; *Echinococcus multilocularis*

Introduction

Hydatid disease is a worldwide parasitic infestation caused by *Echinococcus* spp. In human, the disease is mainly caused by *E. granulosus* and *E. multilocularis*, and causes a major public health burden in many countries.^{1,2} Dogs are the principle reservoir of adult worm and close contact with an infested animal may be a risk for contraction of the disease.³ Most mammals such as sheep, camels and cattle serve as intermediate host for the larvae.³ Humans contract the disease from consumption of contaminated water or food or by direct contact with infested animals. In this way, slaughters, tanners, stockbreeders, shepherds, butchers, veterinarians and all whose job makes them to work closely with animals are at

higher risk of the infection and developing echinococcosis.

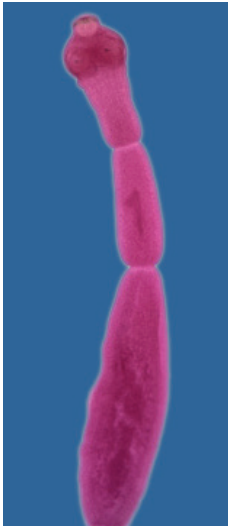
Many countries, particularly those with large numbers of breeding cattle and sheep flocks like New Zealand, Australia, America, Mediterranean countries and Asia, are endemic for the disease.² In many countries of the Middle East such as Iran, the disease is hyper-endemic. Herein, we present a case of lung hydatid cyst ruptured into the pleural cavity of a young shepherd after a trauma to his chest.

Case Presentation

A 14-year-old shepherd came to the emergency department complaining of cough, left sided chest pain, and progressive dyspnea following a falling down three days before. On physical examination, the pa-

¹Department of Diagnostic Radiology, Amir-al-Momenin Hospital, Gerash, Fars, Iran

²Department of Community Medicine, Shiraz University of Medical Sciences, Shiraz, Iran



Correspondence to
Mohammad Farahmand, MD, Department of Diagnostic Radiology, Amir-al-Momenin Hospital, Gerash, Fars, Iran.
E-mail: farahmandpayam@yahoo.com

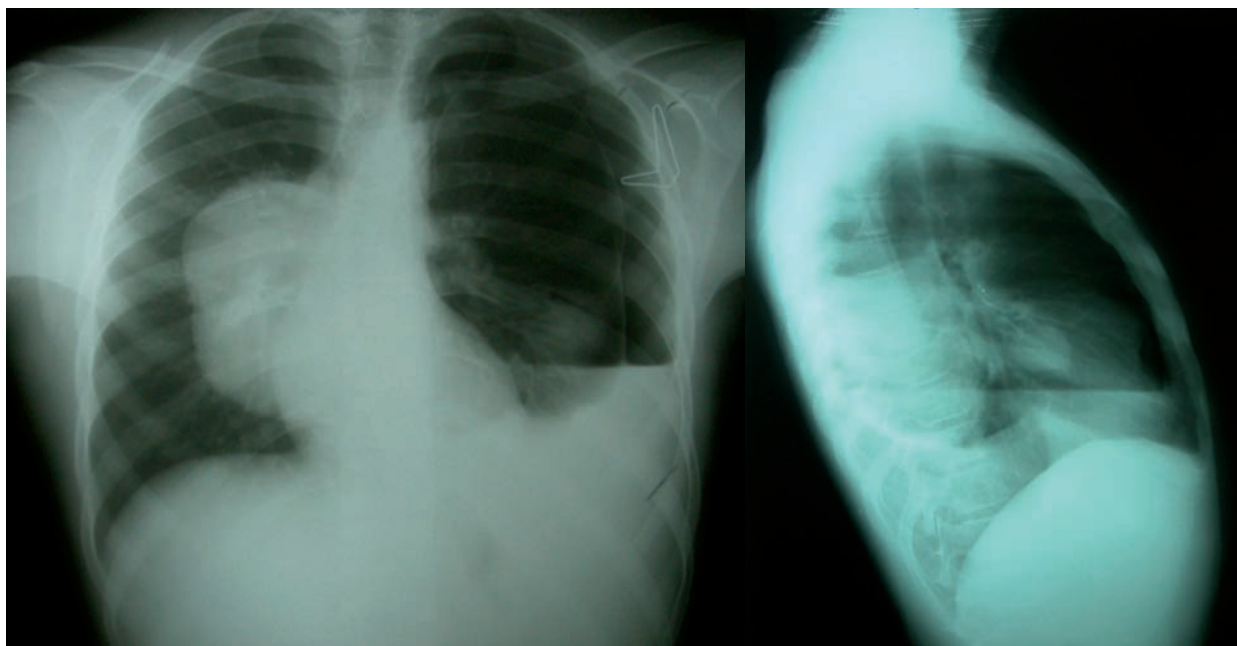


Figure 1: Two large soft tissue densities in both lung fields and hydro-pneumothorax in the left side.

tient has decreased breathing sound in the left side. Routine blood and urine tests were normal. The white blood cell (WBC) count was 8800/ μL with a normal differential count. Abdominal sonography was normal. Chest x-ray (CXR) showed normal rib bone, hydropneumothorax in the left side and two soft tissue densities in both lung fields (Fig. 1).

For the endemicity of hydatid disease in Iran,⁴ our initial impression was echinococcosis of the lung, although such lesions could easily be confused with many infectious processes, and primary neoplastic or metastatic lesions. Computed tomography (CT) confirms the cystic nature of the lesion. An intercostal drainage tube was instituted which lead to prompt relief of his symptoms. Fluid taken from the pleural cavity was sterile. Microscopic examination of the fluid showed numerous scolices. The patient underwent left thoracotomy; pleural decortication and complete enucleation of the peripherally

situated cyst were performed. During the hospital course, follow-up CXR showed an air-fluid level in the unruptured cyst. Repeated CT revealed detachment of the cyst membrane in the larger cyst (Fig. 2). The second complicated cyst was controlled by pharmacotherapy with albendazole (15 mg/kg divided in two doses/day taken with meal for four weeks followed by a 14-day albendazole-free period to be repeated for three cycles). After 10 days of hospitalization, he was discharged in good health with medication. After 10 weeks of follow-up, the patient is doing well.

Discussion

Hydatid disease happens in humans when they unintentionally swallow tapeworm eggs from contaminated water or food or by direct contact with infested animals. Therefore, it might be treated as an occupational disease in certain groups of people whose job brings them in close contact with animals or animal products.

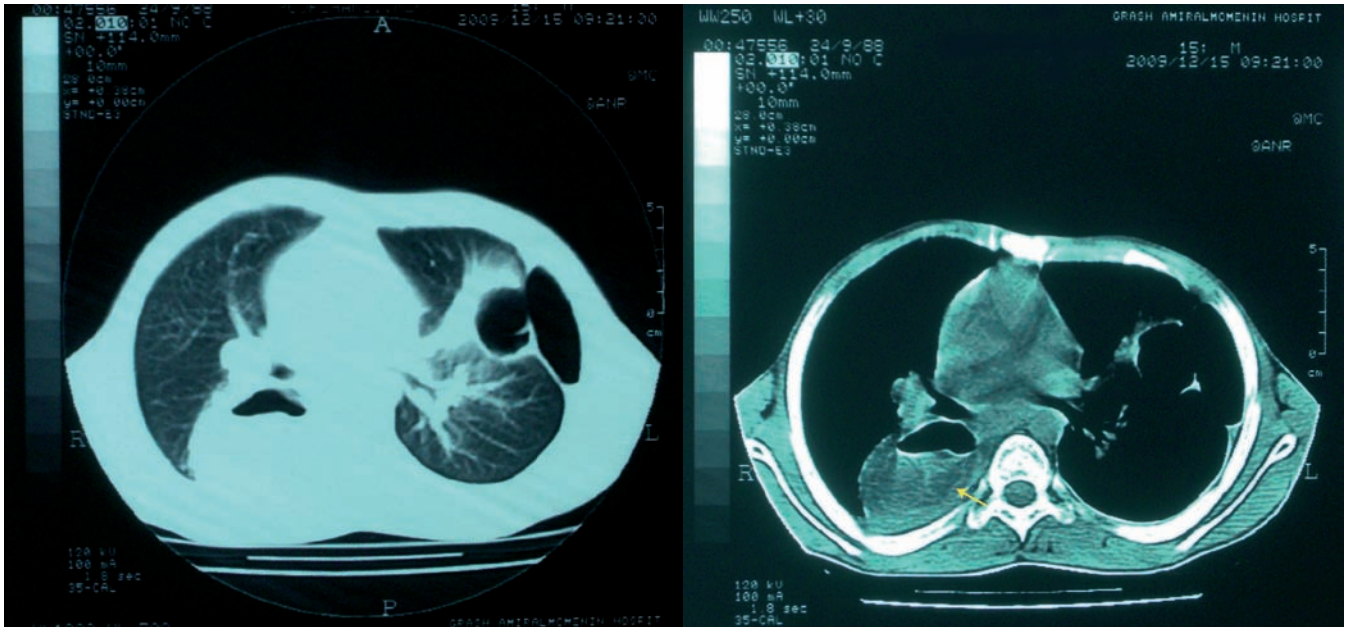


Figure 2: Non-enhanced axial CT showing detachment of the cyst membrane (arrow) in the right cyst producing floating membrane sign. The left cyst caused hydro-pneumothorax and peripheral infiltration.

Although hydatid cyst can be found in any site of the body, it is more common in the liver (75%); the lung (25%) is the second site of involvement. In pediatric age group, the cyst is more commonly found in the lungs than in the liver.^{5,6} Hydatid cyst colonizes more often on the right side of lung than the left side and in most instances, the cyst is solitary.⁷ Rupture of cyst into a bronchus or pleural space (though very rare) is the most important complication of pulmonary hydatid disease.^{7,8} Drainage of the cyst content into the pleural cavity makes a treatment dilemma with poor prognosis. Preexisting inflammation of cyst or pleural ischemia due to pressure effect of a subpleural or peripherally located pulmonary cyst has an important role in the rupture of cyst. Incidentally, rupture can also be precipitated by mild chest trauma. Another complication is the secondary bacterial infection of the cyst which may happen after its rupture.⁹

Depending on the site of involvement,

the cyst(s) may remain silent with no clinical presentation for a long time. The common presentation are compression symptoms such as dry cough in those with very large cysts, a productive cough in cases associated with ruptured to bronchial tree, and chest pain and dyspnea in the cyst is ruptured into the pleural cavity.

Hydatid disease remains a serious health problem, especially in regions where hygienic measures and veterinarian supervision are poor. Since Iran is primarily an agricultural country with large numbers of breeding cattle and sheep flocks grazing over widely separated areas mostly in rural areas, rural population has had to face this parasitic infestation for many years. In Iran, most of shepherds are young and have close contact with animals. Therefore, they have continuous daily contact with this parasite and at higher risk for developing the disease.

The most important diagnostic method for hydatid cyst of lung is plain CXR. Ra-

diological findings range from round or oval-shaped homogenous densities in intact cysts to cavity formation, water lily sign, meniscus sign, hydropneumothorax or infiltrative process of lung parenchyma.

The mainstay of treatment of hydatid disease in lung is surgical intervention. Although medical therapy with albendazole and/or praziquantel is used as an assistance or in inoperable cases. In countries such as Iran, where the disease is endemic, resection should be avoided as far as possible because the disease may recur in operated patients. Therefore, conservative surgical methods which do not cause tissue loss, are preferred.

In geographic regions where hydatidosis is hyperendemic, a high index of suspicion is of utmost importance for the correct diagnosis and treatment of hydatid disease, particularly in those whose occupation might put them at a higher risk of contraction of the disease.

Acknowledgements

The authors would like to thank Dr. Ahmad Abdollahi for providing some information about the patient.

Conflict of Interest: None declared.

References

1. Anadol D, Gocmen A, Kiper N, Ozcelik U. Hydatid disease in childhood: a retrospective analysis of 376 cases. *Pediatr Pulmonol* 1998;**26**(3):190-6.
2. Dziri C. Hydatid disease--continuing serious public health problem: introduction. *World J Surg* 2001;**25**(1):1-3.
3. Bouree P. Hydatidosis: dynamics of transmission. *World J Surg* 2001;**25**(1):4-9.
4. Sadrieh M, Dutz W, Navabpoor MS. Review of 150 cases of hydatid cyst of the lung. *Dis Chest* 1967;**52**(5):662-6.
5. Singh V. Global pediatric pulmonology: what is coming to the West--out of India? *Paediatr Respir Rev* 2006;**7** Suppl 1:S223-5.
6. Kurkcuoglu IC, Eroglu A, Karaoglanoglu N, Turkyilmaz A, Tekinbas C, Basoglu A. Surgical approach of pulmonary hydatidosis in childhood. *Int J Clin Pract* 2005;**59**(2):168-72.
7. Ramos G, Orduna A, Garcia-Yuste M. Hydatid cyst of the lung: diagnosis and treatment. *World J Surg* 2001;**25**(1):46-57.
8. Shameem M, Bhargava R, Ahmad Z, Fatima N, Nazir Shah N. Mediastinal hydatid cyst rupturing into the pleural cavity associated with pneumothorax: case report and review of the literature. *Can Respir J* 2006;**13**(4):211-3.
9. Zeyrek D, Savas R, Gulen F, Demir E, Tanac R. "Air-bubble" signs in the CT diagnosis of perforated pulmonary hydatid cyst: three case reports. *Minerva Pediatr* 2008;**60**(3):361-4.