Case Report

Multiorgan Involvement in a Pediatric Patient with Hydatid Disease

by D. Olmez,[a] A. Babayigit,[a] H. Arslan,[b] N. Uzuner,[a] Y. Ozturk,[c] O. Karaman,[a] *and* H. Cakmakci[d]
[a]*Department of Pediatric Allergy and Pulmonology, Dokuz Eylul University Hospital, Izmir, Turkey*
[b]*Department of Pediatrics, Dokuz Eylul University Hospital, Izmir, Turkey*
[c]*Department of Pediatric Gastroenterology, Dokuz Eylul University Hospital, Izmir, Turkey*
[d]*Department of Radiology, Dokuz Eylul University Hospital, Izmir, Turkey*

Summary

Human Echinococcus infection still remains an important health problem in endemic regions. Herein, we report a 5-year-old boy with hydatid disease who has spleen, lung, kidney and liver involvement simultaneously. To our knowledge, there is no pediatric case with hydatid disease in the literature reporting simultaneous involvement of spleen, kidney, liver and lungs as in our case.

Cystic echinococcosis (CE), caused by *Echinococcus granulosus*, is a chronic disease responsible for considerable morbidity and mortality worldwide [1]. Hydatid diseases of spleen and kidney are extremely rare even in endemic areas [2, 3]. Because cysts normally require 1–5 years to develop, the diagnosis of pediatric echinococcosis is also rare even in highly endemic countries [4].

Herein, we report a 5-year-old boy with multiorgan hydatid disease. To our knowledge, there is no pediatric case with CE in the literature who has spleen, lung, kidney and liver involvement simultaneously as in our case.

Case Report

A 5-year-old boy was admitted to our hospital because of persistent fever, abdominal pain and productive cough for 10 days. Examination revealed a febrile (39°C) child with crepitant rales in both lungs and hepatomegaly. Chest radiography revealed multiple nodular lesions. Computerized tomography (CT) of thorax (Fig. 1) showed multiple nodular and cystic lesions, the biggest 3 cm in diameter, in both lungs. In the upper lobe of the left lung, alveolar consolidation next to a cavity with an air-fluid level suggested secondary infection due to rupture of a pulmonary cyst. Abdominal CT revealed multiple cysts in liver (Fig. 2a) and one each in spleen and kidney (Fig. 2b). Cerebral CT and echocardiography examinations were normal. Laboratory tests showed increased white blood cell count ($22\,000\,mm^{-3}$), C-reactive protein ($72\,g\,dl^{-1}$) and erythrocyte sedimentation rate ($100\,mm\,h^{-1}$). Enzyme-linked immunosorbent assey (ELISA) and immune hemaglutination (IHA) were found positive in the titers of 1/10 000 and 1/10 000, respectively. Sputum gram stain, bacterial culture and microscopy for hydatid rostellar hooklets and blood cultures were negative. Intravenous seftriaxone and metronidazole treatments were started for pulmonary infection in addition to antihelmintic therapy with oral albendazole, $15\,mg\,kg^{-1}\,d^{-1}$ in two



FIG. 1. Thorax CT revealed multiple nodular and cystic lesions.

Correspondence: Duygu Olmez, Dokuz Eylul University Hospital, Department of Pediatric Allergy, Izmir, Turkey. Tel.: 00902324123661.
E-mail <duyguolmez@hotmail.com>.

© The Author [2008]. Published by Oxford University Press. All rights reserved. For Permissions, please email: journals.permissions@oxfordjournals.org

doi:10.1093/tropej/fmn054 Advance Access Published on 1 July 2008

Downloaded from https://academic.oup.com/tropej/article/54/6/417/1680034 by Dokuz Eylul University Library (DEU) user on 02 September 2021

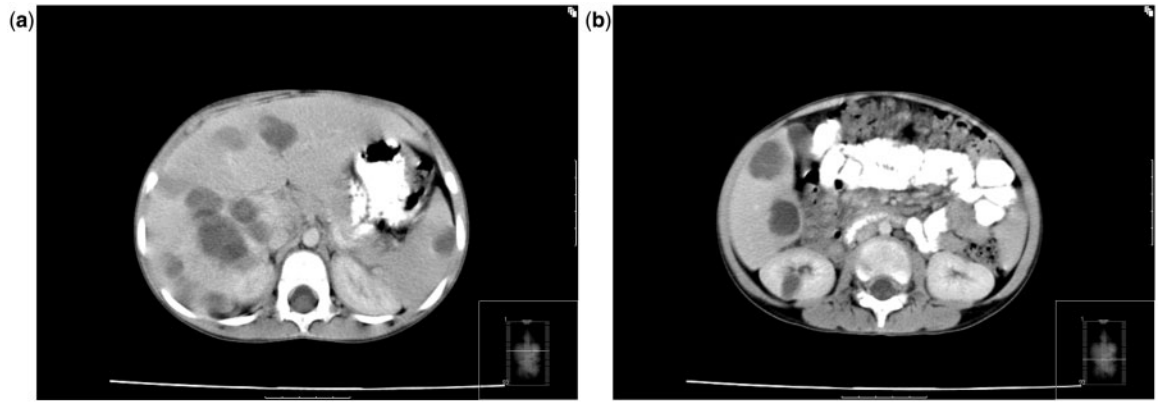


FIG. 2. (**a**) Abdominal CT showed multiple cysts in liver, (**b**) Abdominal CT revealed cysts in spleen and kidney.

daily doses. Because the fever was persisted after 1 week of the therapy, bacterial antibiotics were changed with meropenem and amicasin and continued for 3 weeks. After 1 month of the therapy, radiological improvement was achieved, especially in cysts localized in both lungs.

Discussion

Hydatid disease, a parasitic infestation caused by the larval stage of the cestode *E. granulosus*, is prevalent worldwide, especially in countries with a warm climate [1]. In children the lungs appear to be the most common site, although 70% of adults have the disease in the liver. Cysts can also be found in bone, the genitourinary system, bowels, subcutaneous tissues and brain [5]. CE is rarely found in other organs including kidney and spleen [2, 3]. Kidney involvement accounts for 4–5% of children and is often accompanied by liver or lung cysts. Simultaneous occurrence in these three organs reported only in one case [3, 6]. Spleen involvement is rare and occurs in 1–8% of children with hydatid disease [2]. To our knowledge, there is no child with hydatid disease in the literature reporting simultaneous involvement of spleen, kidney, liver and lungs as in our case.

The disease is usually asymptomatic, symptoms may occur with the rupture, infection and compression of the cysts. Abdominal and chest pain, coughing, expectoration of the cyst, respiratory distress, anaphylaxis, jaundice, fever, headache and neurological signs may occur related with the localization of the cysts [7]. Our patient presented with persistent fever, abdominal pain and productive cough. ELISA and IHA are the most common serological tests performed for the diagnosis. Negative serology does not exclude the diagnosis. Radiographic methods are the most valuable diagnostic tests [8]. In our patient, both serological tests and radiographic images confirmed the diagnosis.

Surgery has been the basic treatment modality of CE despite a significant risk of mortality and high incidence of recurrence [9]. Albendazole or mebendazole have been commonly used in the medical treatment of the disease [10]. Trials with mebendazole or albendazole have given promising results, especially in cases of multiple cysts as in our patient [9]. In our case, radiological improvement was achieved with albendazole, especially in cysts localized in both lungs after 1 month of the therapy.

In conclusion, we report a pediatric case of disseminated CE affecting the lung, liver, kidney and spleen for the first time in the literature.

References

1. Budke CM, Qiu JM, Zinsstag J, *et al*. Use of disability adjusted life years in the estimation of the disease burden of echinococcosis for a high endemic region of the Tibetan plateau. Am J Trop Med Hyg 2004;71:56–64.
2. Kalinova K, Stefanova P, Bosheva M. Surgery in children with hydatid disease of the spleen. J Pediatr Surg. 2006;41:1264–6.
3. Zmerli S, Ayed M, Horchani A, *et al*. Hydatid cyst of the kidney: diagnosis and treatment. World J Surg 2001;25:68–74.
4. Emilio C, Losurdo G, Mollero L, Giacchino R. Multiorgan echinococcosis in a pediatric patient. Pediatr Infect Dis J 2005;24:660–1.
5. Blanton R. Echinococcosis (Echinococcus granulosus and E. multilocularis). In: Behrman RE, Kliegman RM, Jenson HB (eds). Nelson Textbook of Pediatrics, 16th edn. Philadelphia: WB Saunders, 2000; 1079–81.
6. Kaya Z, Gursel T. A pediatric case of disseminated cystic echinococcosis successfully treated with mebendazole. Jpn J Infect Dis 2004;57:7–9.

Downloaded from https://academic.oup.com/tropej/article/54/6/417/1680034 by Dokuz Eylul University Library (DEU) user on 02 September 2021

7. Anadol D, Gocmen A, Kiper N, Ozcelik U. Hydatid disease in childhood: a retrospective analysis of 376 cases. Pediatr Pulmonol 1998;26:190–6.
8. King CH. Echinococcosis. In: Mandell GL, Bennett JE, Dolin R (eds). Principles and Practice of Infectious Disease, 5th edn. New York: Churchill Livingston, 2000; 2962–3.
9. Jerray M, Benzarti M, Garrouche A, *et al*. Hydatid disease of the lungs. Study of 386 cases. Am Rev Respir Dis 1992;146:185–9.
10. Jonathan CP, Zayne D, Sinclair-Smith C. Hydatid infestation of brain: difficulties with computed tomography diagnosis and surgical treatment. Pediatr Neurosurg 1994;20:78–83.

Downloaded from https://academic.oup.com/tropej/article/54/6/417/1680034 by Dokuz Eylul University Library (DEU) user on 02 September 2021