Hepatitis Monthly 2008; 8(4): 310-312

CASE REPORT

Hepatic Toxocariasis in a Child: A Case Report from Shiraz, Southern Iran

Mohammad Zibaei [1, 2*], Seyed Mahmoud Sadjjadi [2], Bita Geramizadeh [3], Farzaneh Firoozeh [4]

[1] Department of Parasitology and Mycology, School of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran
[2] Department of Parasitology and Mycology, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran
[3] Department of Pathology, Transplant Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
[4] Department of Microbiology, Faculty of Veterinary Medicine, Tehran University, Tehran, Iran

Toxocariasis is a worldwide human helminthiasis. This disease is mostly asymptomatic and caused by Toxocara canis and Toxocara cati, intestinal nematodes (roundworms) in dogs and cats. These can cause visceral larva migrans syndrome in humans who ingest eggs from contaminated soil or consume of meat of paratenic hosts. A 6-year-old child with fever, chills, pain in right upper quadrant, eosinophilia of 20% and elevated total serum immunoglobulin levels is presented. Ultrasonography demonstrated two hypoechoic heterogeneous hepatic lesions measuring 0.7 × 0.7 cm in size located in the right lobe of liver. An enlarged periportal lymph node was noted. The case was diagnosed as hepatic toxocariasis based on sonographic and biopsy findings. The final diagnosis was confirmed by enzyme-linked immunosorbent assay (ELISA) test. It can be concluded that hepatic toxocariasis should be included in the differential diagnosis of multiple liver nodules, particularly in cases with eosinophilia.

Keywords: **Hepatic Toxocariasis, Eosinophilic Granuloma, Ultrasonography, Computed Tomography**

Introduction

Toxocariasis is a zoonotic disease caused by the larval stage of Toxocara species. Humans are infected by ingestion of embryonated eggs in the soil or through contaminated hands and fomites [(1)]. These clinical entities have been recognized in humans: Visceral Larva Migrans (VLM), Ocular Larva Migrans (OLM) and Covert Toxocariasis (CT).

Most commonly, VLM is a febrile disease of childhood, particularly affecting children between the age of one and five [(2)]. Focal hepatic lesions which are common in VLM and preportal lymph node enlargements have been reported in patients evaluated sonographically [(3)]. We reported serological, pathological and imaging findings of a child with hepatic toxocariasis.

Case Report

In August 2007, a 6 year-old boy with a history of fever, chill, nausea, fatigue and pain in right upper quadrant was brought to the emergency room. On complete blood count he showed a Leukocyte count of 9700/ µl with marked eosinophilia (20%) (Table 1).

Ultrasonography of the patient's abdomen showed normal liver size and shape but two hypoechoic area in right lobe. A computed tomography (CT) revealed a large mass in the posterior segment of the right lobe with extension into the caudate lobe and left lobe with some peripheral early enhancement (Fig. 1). In delayed cuts, enhancement showed a thickened zone then early central parts were not enhanced.

To evaluate the liver findings further, a core liver

**** Correspondence:***
Mohammad Zibaei, Ph.D., Assistant Professor of Parasitology, Department of Parasitology and Mycology, School of Medicine, Lorestan University of Medical Sciences, Khorramabad, Iran.

Tel/Fax: *+98 661 6200133*

E-mail: *zibaeim@sums.ac.ir*

Received: *21 Jul 2008* ***Revised:*** *16 Sep 2008*
Accepted: *6 Oct 2008*

Hep Mon 2008; 8 (4): 310-312

Table 1. The patient's laboratory test results.

Indicator	The patient's values	Normal
White blood Cell count (×1000/µl)	9.7	4-10
Eosinophil	20%	1-10
Hemoglobin concentration (g/dl)	10.8	11.5-18
Platelet count (×1000/µl)	378	150-400
SGOT (IU/L)	24	6-40
SGPT (IU/L)	42	0-35
ALP (IU/L)	310	100-280

SGOT: Serum glutamic oxaloacetic transaminase, SGPT: Serum glutamic pyruvic transaminase, ALP: Alkaline phosphatase.

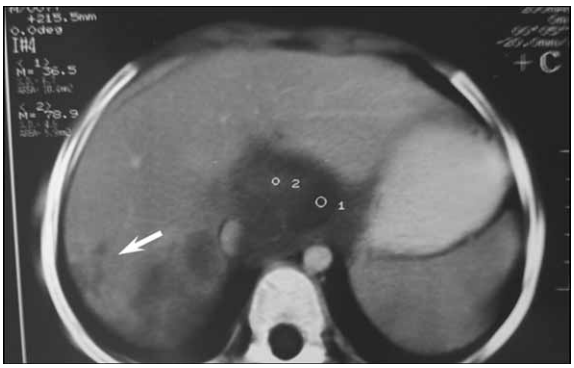

Figure 1. An abdominal CT scan of the patient showing a hypoechoic heterogeneous lesion in the right lobe of the liver (arrow).

biopsy was taken. Histological analysis of the biopsy sample revealed the presence of two round small nodules each measuring: 0.7 × 0.7× 0.7cm and eosinophilic granuloma lesions with central necrosis. This finding was suggestive of visceral larva migrans. A serological test was carried out which detected elevated levels of Toxocara in the serum using an enzyme-linked immunosorbent assay (ELISA) that detects antibodies against second stage larvae Toxocara excretory- secretory protein. The patient was treated with albendazole 400 mg twice daily for 7 days. After 40 days, the patient's symptoms diminished, laboratory studies revealed reduced leukocytes (7800/ µl) and eosinophilia (2%).

Discussion

Toxocariasis is a worldwide distributed helminthzoonosis caused by the infection of humans with second stage larvae of the nematode worms Toxocara species. Both Toxocara canis and Toxocara cati are considered to be causative agents of human toxocariasis [4]. The eggs of the worms are excreted in the feces of their definitive hosts, dogs and cats, respectively. Transmission to humans occurs when infective eggs in soil are ingested by mammalian hosts. These eggs can survive many months in the soil and can infect a wide range of paratenic hosts including humans [5]. Children may become affected while playing in sandboxes or playgrounds. Sometimes human beings become infected by eating the meat of paratenic hosts containing encapsulated larvae [6]. The disease is more prevalent in children; therefore, the seroprevalence of Toxocara infection is estimated to be 4% to 31% in developed countries and may increase to 86% in tropical regions, where environmental conditions favor the transmission of geohelminths [7, 8].

Some clinical features of liver toxocariasis can mimic tumors and may be interpreted histologically as granulomatous hepatitis, eosinophilic infiltrate of the hepatic portal vein, and/or necrotizing eosinophilic abscesses [9, 10]. Eosinophilic granulomas have been detected on tissue liver biopsy [11, 12]. The symptoms of VLM usually include fever, anorexia, cough, nausea, vomiting and right upper quadrant pain. Hepatic involvement of VLM is common due to portal venous drainage of visceral organs. However, a clinical history with laboratory findings of eosinoplilia, a rise in serum total immunoglobulin and a positive serologic test along with histological proof of the affected organ confirm the diagnosis of toxocariasis.

Several studies have evidenced that visceral toxocariasis can be detected by CT and MRI [13-19]. The hepatic lesions are seen as low density areas on CT and as high signal areas on T2 weighted images [17]. Bhatia and sarin reported that their ultrasonographic findings changed from hypoechoic mass lesions with hyperechoic rims as the disease advanced [13]. The hepatic lesions in our patient were homogeneously hypoechoic masses. In the case discussed here, hepatomegaly was not confirmed but two hypoechoic hepatic nodules and enlarged perportal lymph nodes were note. Subsequently, laboratory and histopathologic findings confirmed the diagnosis of toxocariasis.

In conclusion, toxocariasis should be thought of in differential diagnosis of multiple liver nodules, particulary in cases with eosinophilia, and ruled out by imaging technique such as CT and MRI and also by confirmatory laboratory and histopathological findings.

Acknowledgments

The authors express their sincere gratitude for the financial support provided by the Department of Parasitology and Mycology, Shiraz University of

Medical Sciences and also wish to thank Mrs. Kazemian and Mr. Farhangmehr for their technical assistance.

References

1. Schantz PM, Glickman LT. Toxocaral visceral larva migrans. *N Engl J Med*. 1978;**298**(8):436-9.
2. Kabaalioglu A, Ceken K, Alimoglu E, Saba R, Apaydin A. Hepatic toxocariasis: US, CT and MRI findings. *Ultraschall Med*. 2005;**26**(4):329-32.
3. Baldisserotto M, Conchin CF, Soares Mda G, Araujo MA, Kramer B. Ultrasound findings in children with toxocariasis: report on 18 cases. *Pediatr Radiol*. 1999;**29**(5):316-9.
4. Zibaei M, Uga S. Contamination by Toxocara spp. Eggs in sandpits in Kobe, Japan. *Journal of Environmental Control Technique* 2008;**26**:32- 8.
5. Schantz PM. Toxocara larva migrans now. *Am J Trop Med Hyg*. 1989;**41(3 Suppl)**:21-34.
6. Azizi S, Oryan A, Sadjjadi SM, Zibaei M. Histopathologic changes and larval recovery of Toxocara cati in experimentally infected chickens. *Parasitol Res*. 2007;**102**(1):47-52.
7. Taylor M, RH., Holland C, V. Toxocariasis. In: Gillespie S, H., Pearson R, D., editors. *Principles and practice of clinical parasitology*. Chichester, UK: Wiley; 2001. p. 501-22.
8. Sadjjadi SM, Khosravi M, Mehrabani D, Orya A. Seroprevalence of toxocara infection in school children in Shiraz, southern Iran. *J Trop Pediatr*. 2000;**46**(6):327-30.
9. Rey P, Bredin C, Carrere C, Froment N, Casassus-Builhe D. [Toxocariasis mimicking liver tumor]. *Presse Med*. 2005;**34**(22 Pt 1):1715-6.
10. Kayes SG. Human toxocariasis and the visceral larva migrans syndrome: correlative immunopathology. *Chem Immunol*. 1997;**66**:99-124.
11. Lim JH. Toxocariasis of the liver: visceral larva migrans. *Abdom Imaging*. 2008;**33**(2):151-6.
12. Leone N, Baronio M, Todros L, *et al*. Hepatic involvement in larva migrans of Toxocara canis: report of a case with pathological and radiological findings. *Dig Liver Dis*. 2006;**38**(7):511-4.
13. Bhatia V, Sarin SK. Hepatic visceral larva migrans: evolution of the lesion, diagnosis, and role of high-dose albendazole therapy. *Am J Gastroenterol*. 1994;**89**(4):624-7.
14. Hayashi K, Tahara H, Yamashita K, *et al*. Hepatic imaging studies on patients with visceral larva migrans due to probable Ascaris suum infection. *Abdom Imaging*. 1999;**24**(5):465-9.
15. Jain R, Sawhney S, Bhargava DK, Panda SK, Berry M. Hepatic granulomas due to visceral larva migrans in adults: appearance on US and MRI. *Abdom Imaging*. 1994;**19**(3):253-6.
16. Ishibashi H, Shimamura R, Hirata Y, Kudo J, Onizuka H. Hepatic granuloma in toxocaral infection: role of ultrasonography in hypereosinophilia. *J Clin Ultrasound*. 1992;**20**(3):204-10.
17. Azuma K, Yashiro N, Kinoshita T, Yoshigi J, Ihara N. Hepatic involvement of visceral larva migrans due to Toxocara canis: a case report--CT and MR findings. *Radiat Med*. 2002;**20**(2):89-92.
18. Hossack J, Ricketts P, Te HS, Hart J. A case of adult hepatic toxocariasis. *Nat Clin Pract Gastroenterol Hepatol*. 2008;**5**(6):344-8.
19. Yoshikawa M, Ouji Y, Nishiofuku M, *et al*. Visceral toxocariasis from regular consumption of raw cow liver. *Intern Med*. 2008;**47**(13):1289-90.