

available). The convulsions were controlled with IV diazepam. Within a few minutes of IV administration of neostigmine, his pulse rate dropped to 130/min and he passed urine. Pupils remained dilated and fixed. A repeat dose was administered after 8 as his symptoms recurred. By 18, his general condition stabilized and pupils become sluggishly reactive but remained dilated. After 48 h of hospital stay and confirming nonprogressive stage II ROP, he was discharged. The child is now 6 months old and doing well with normal vision and development.

Discussion

Unusual sensitivity to therapeutic doses of atropine is rarely encountered. Factors predisposing to increasing sensitivity include Down's Syndrome, hot and humid climate, children less than one year, paralytic ileus and bronchial asthma. Atropine Sulphate intoxication leading to convulsions and coma have been reported with doses of 0.09 mg/kg and death has resulted from a dose as low as 0.2 mg/kg.⁽¹⁾ Atropine toxicity from oral administration of atropine methonitrate (Euemydrin) drops⁽²⁾ and as a result of use of homatropine and atropine sulphate drops and ointment⁽³⁾ has been reported. Following ophthalmic application, absorption may occur through conjunctival sac or following swallowing of drops after it tracks down through the nasolacrimal duct⁽³⁾. The treatment is symptomatic and physostigmine may be used in doses of 0.5 mg to a maximum of 2 mg^(1,2).

In our case, atropine toxicity resulted from a dose of 0.25 mg/kg but recovered completely. With improving neonatal care, ophthalmic examination for detecting retinopathy is being more frequently done

in India. We feel that atropine preparations should be used with caution especially in premature infants.

REFERENCES

1. Ellenborn MJ, Barceloux DJ. Plants, mycotoxins and mushrooms. In: Medical Toxicology; Diagnosis and Treatment of Human Poisoning. New York, Elsevier Science Publishing Company, 1988, pp 1257-1265.
2. Meerstadt PWD. Atropine poisoning in early infancy due to Eumydrin drops. Br Med J 1982, 285; 196-197.
3. Hogngel O. Toxic effects of atropine and homatropine eyedrops in children. N Eng J Med 1961, 264: 168-171.

Hydatid Disease

M. Verma

D. Singh

J. Chhatwal

R.S. Beri

N. Kumar

M.C. Deodhar

T. Singh

D.K. Gupta

The diagnosis of hydatid disease is often not considered in children, particularly in nonendemic areas. The initial diagnosis

From the Department of Pediatrics and Pediatric Surgery, Christian Medical College, Ludhiana.

Reprint requests: Prof. Manorama Verma, Professor and Head, Department of Pediatrics and Pediatric Surgery, Christian Medical College, Ludhiana 141 008.

Received for publication October 26, 1990;

Accepted February 4, 1991

may also be missed when a patient presents with abdominal infestation or solitary cysts in lungs(1).

Hydatid disease is caused by the parasites *E. granulosus* and *E. multilocularis*. Of the two, the former is believed to be more commonly responsible for causing the human disease. The common sites of involvement include liver and lungs, although involvement of other organs like kidney and pleura has also been reported(2,3).

Material and Methods

To analyse the spectrum of hydatid disease in children in Ludhiana, case records of 8 children admitted over a period of 10 years (1979-1989) were reviewed (Table I).

All patients belonged to the state of Punjab; 38% were females. The mean age was 9.5 years (range 6-12 years). Six children presented with abdominal mass and two had respiratory symptoms, cough and chest pain, and one had hemoptysis also.

All 6 cases with abdominal symptoms had hepatomegaly. Liver enlargement ranged from 3 to 5 cm below the right coastal margin in mid clavicular line and was firm in consistency. In 2 cases cystic masses could be felt over the enlarged surface of liver. There was no ascitis in any case. In respiratory cases, crepitations were heard in the affected side, along with diminished breath sounds.

Case No. 7 had coughed out a whitish membrane, which was histopathologically confirmed to be part of the wall of a hydatid cyst.

Investigations revealed TLC ranging from 8000 to 25,600/cu mm. Absolute eosinophil count ranged from 372 to 3480/cu mm with a mean of 1472/cu mm. Casoni's

test was positive in 4 out of 7 (57.1%). X-ray chest was helpful in the diagnosis of hydatid disease of lung, whereas ultrasonography was the most effective tool for the pre-operative diagnosis of hydatid disease of liver. A combination of various investigations including Casoni's test, X-ray chest and ultrasonography helped in making an accurate pre-operative diagnosis in 6 patients while in 2 cases accurate diagnosis could not be made till the time of exploratory laparotomy.

Operative findings confirmed the involvement of liver in 6 and lungs in 2 cases. Three out of the 6 cases with liver involvement had multiple hydatid cysts. Case No. 8 had secondary bacterial infection of the cyst.

All patients were discharged in a satisfactory condition. The mean duration of hospital stay was 22.9 days (range 9-72 days).

Discussion

Hydatid cyst is known to remain dormant for a number of years; however, when it begins to grow, the average rate of growth may be 2-3 cm per year(4). The rate of growth is dependent on the resistance of the host tissues and is, therefore, more in lungs than in liver.

The incidence of Echinococcosis in children peaks at the age of 10-12 years and the sex distribution is equal(5-7). In the present series, the males were slightly more which may be because of gender discrimination.

Successful pre-operative diagnosis depends upon a high index of suspicion. The once popular Casoni's test is now considered unreliable. However, ultrasonography has greatly facilitated the pre-operative

TABLE I.—The Clinical Profile of 8 Children with Hydatid Cysts

Case No.	Age (yrs)	Sex	Clinical presentation	Site of lesion	TLC	AEC	Diagnosis arrived by	Single/Multiple
1.	11½	M	Hepatomegaly	Rt. lobe liver	9300	372	Casoni's test, Ultrasound abdomen	Single
2.	8	M	Hepatomegaly	Rt. lobe liver	10800	1296	Ultrasound abdomen	Multiple
3.	10	F	Hepatomegaly	Rt. & Lt. lobes liver	15000	1050*	Eosinophilia*	Single
4.	6	M	Hepatomegaly	Lt. lobe liver	13200	660	Ultrasound abdomen	Multiple
5.	8	F	Hepatomegaly	Rt. & Lt. lobe liver	25600	2560	Casoni's test, Ultrasound abdomen	Multiple
6.	10	M	Hepatomegaly	Lt. lobe liver	12000	3480	Eosinophilia*	Single
7.	12	M	Respiratory symptoms	Lt. lung, lower lobe	8000	400	Casoni's test, Chest X-ray	Single
8.	10½	F	Respiratory symptoms	Rt. lung, upper lobe	20000	1600	Casoni's test, Chest X-ray	Single

Lt. = Left; Rt. = Right; TLC - Total leucocyte count, AEC - Absolute eosinophil count.

* The diagnosis was confirmed during operation.

diagnosis of hydatid disease, in addition, it provides valuable information regarding daughter cysts which would not be picked up on clinical examination alone(1). X-ray chest plays a significant role in the diagnosis of pulmonary hydatid cysts. Certain serological tests like electroimmunophoresis and indirect hemagglutination provide a significant contribution to the diagnosis(8). An enzyme linked immuno sorbent assay has recently been described to give a 95% diagnostic accuracy and a 95.1% serological differentiation between the cystic and alveolar forms of the disease(9).

Surgical treatment is by far the conventional and time tested therapy in hydatid disease. Enucleation is the treatment of choice because of its safety and technical ease, although long hospital stay and post operative complications like infection of the residual cavity have been reported(5,7,10).

Mebendazole has recently been used in the post operative management of hydatid cyst(8,10). The cyst wall is permeable to the drug but since the solubility in water is poor, high doses are necessary to reach effective levels. The preliminary reports of albendazole show good promise; more so in the management of multiple hydatid cysts and those with peritoneal seedlings(13).

It is concluded that although not very common in children, hydatid disease needs to be considered in the differential diagnosis of hepatomegaly and in children presenting with cystic shadows on chest radiograph. Casoni's test not only gives false negative results but also is difficult to perform at times due to technical reasons. Ultrasonography remains a useful tool in diagnosing and localising the cyst.

REFERENCES

1. Bhatnagar V, Mitra DK. Childhood echinococcosis—a clinical profile. *Indian J Pediatr* 1988, 55: 312-316.
2. Sinha RNP, Lahiri TK, Kashyap A. Pleural hydatidosis. *J Indian Med Assoc* 1984, 82: 371-372.
3. ElMauhouh M, Aggarwal VP, Sabhawal HS. Hydatid disease with nephropathy. *Indian Pediatr* 1987, 24: 1137-1139.
4. Vachier E, Hillman DC. Solitary pulmonary hydatid cyst. *Pediatrics* 1965, 35: 699-703.
5. Hicsonez A. Hydatid cysts in Childhood—Analysis of 208 cases. *Prog Pediatr Surg* 1982, 15: 87-94.
6. Slim MS, Akel SR. Hydatidosis in childhood. *Prog Pediatr Surg* 1982, 15: 119-129.
7. Mottaghian H, Mohmondi S, Vaez-Zadehk. A ten years survey of hydatid disease in children. *Prog Pediatr Surg* 1982, 15: 95-112.
8. Pineyro JR. Hydatid disease of the lung. *Prog Pediatr Surg* 1982, 15: 113-118.
9. Gottstein B, Schantz PM, Todorov J, Saimot AG, Jacquier P. An international study on the serological differential diagnosis of human cystic and alveolar echinococcosis. *Bull WHO* 1986, 64: 101-105.
10. Elhamel A, Murthy BS. Hepatic hydatid diseases in Libya. *Br J Surg* 1986, 73: 125-127.
11. Morris DL. Chemotherapy of hydatid disease. *J Antimicrob Chemother* 1983, 11: 494-496.
12. Kerr P. Hyman echinococcosis—follow up of 23 patients treated with mebendazole. *Infection* 1983, 11: 17-24.
13. Karpathios T, Syriopoulou V, Nicolaidou P, Messaritakis J. Mebendazole in the treatment of hydatid cysts. *Arch Dis Child* 1984, 59: 894-896.