CASE REPORT

Hydatid cyst of liver

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Abstract

Hydatid cyst disease due to Echinococcus granulosus is an endemic parasitic zoonosis characterized by worldwide distribution. The most commonly involved anatomical locations are the liver and lung, occasionally spleen and other organs can be involved. This disease is found more commonly in rural population as compared to urban population and found common in children and adolescents. Echinococcus granulosus is a cosmopolitan parasite, and endemic regions exist in each continent.

Keywords: Hydatid cyst, scolices, daughter cyst, echinococcus granulosus

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Introduction:

Hydatid disease is an endemic problem in certain geographical parts of the world. The most commonly affected organ is liver in children. The incidence of the disease and need of surgery associated removal of cyst is higher in rural population than urban population, particularly among children and adolescents. E. granulosus is a cosmopolitan parasite, and endemic regions exist in each continent. Considerable public health problems occur in many areas, including countries of Central America and South America, Western and Southern/Southeastern Europe, the Middle East and North Africa, some sub-Saharan countries, Russia and adjacent countries, and China. Annual incidence rates of diagnosed human cases per 100,000 inhabitants vary widely, from less than 1 case per 100,000 to high levels.

Cystic echinococcosis (CE) is the larval cystic stage (called echinococcal cysts) of a small taeniid-type tapeworm (Echinococcus granulosus) that may cause illness in intermediate hosts, generally herbivorous animals and people who are infected accidentally. Three other species are recognized within the genus Echinococcus, and they may also develop in the human host and cause various forms of echinococcosis (hydatidosis). E granulosus is discussed separately from the other 3 species, notably Echinococcus Multilocularis, which causes alveolar echinococcosis, because of marked differences in epidemiology, clinical features, diagnosis, and treatment.

In the typical dog-sheep cycle, tapeworm eggs are passed in the feces of an infected dog and may subsequently be ingested by grazing sheep; they hatch into embryos in the intestine, penetrate the intestinal lining, and are then picked up and carried by blood throughout the body to major filtering organs (mainly liver and/or lungs). After the developing embryos localize in a specific organ or site, they transform and develop into larval echinococcal cysts in which numerous tiny tapeworm heads (called protoscolices) are produced via asexual reproduction. These protoscolices are infective to dogs that may ingest viscera containing echinococcal cysts (with protoscolices inside), mainly because of the habit in endemic countries of feeding dogs viscera of home-slaughtered sheep or other livestock. Protoscolices attach to the dog's intestinal lining and, in approximately 40-50 days, grow and de-

velop into mature adult tapeworms, once again capable of producing infective eggs to be passed to the outside environment with the dog's feces.

Because humans play the same role of intermediate hosts in the tapeworm life cycle as sheep, humans also become infected by ingesting tapeworm eggs passed from an infected carnivore. This occurs most frequently when individuals handle or contact infected dogs or other infected carnivores or inadvertently ingest food or drink contaminated with fecal material containing tapeworm eggs.

In primary echinococcosis, larval cysts may develop in every organ. Most patients (as many as 80%) have single-organ involvement and harbor a solitary cyst. Approximately two thirds of patients experience liver echinococcosis. The second most common organ involved is the lung.

In each anatomic site, cysts are surrounded by the periparasitic host tissue (pericyst), which encompasses the endocyst of larval origin. Inside the laminated layer, or hyaline membrane, the cyst is covered by a multipotential germinal layer, giving rise to the production of brood capsules and protoscolices. The central cavities of cysts of E granulosus are filled with clear fluid, numerous brood capsules, and protoscolices. In addition, daughter cysts of variable size are often detected. The growth rate of cysts is highly variable and may depend on strain differences. Estimates of the average increase of cyst diameter vary (approximately 1-1.5 cm/y).

Case report:

Eleven year old girl presented in outpatient department as a case of repeated attacks of upper abdominal pain of six months duration. Pain was mild in intensity, sometime associated with vomiting. Ultrasound abdomen was done which showed enlarged liver two cystic lesions, one in the right lobe of liver measuring 5.5x5cm containing multiple daughter cysts. Another large cyst was present in the left lobe of liver measuring 7.6x5cm with thick irregular wall. CT scan of abdomen showed same lesions with endocyst containing daughter cysts. Echinococcus granulosus (EG) titer was raised. There was esinophilia about 33%. Before surgeries resuscitative and the anaphylactic measure has been taken to prevent them. Laparotomy was performed and both cysts were removed. There was no bile in the cavities. There was no spillage. 20% hypertonic saline was used as scolicidal. Microscopic examination revealed Hydatid cyst consist of thin inner germinal layer with attached brood capsule filled with protoscolices protected by thick outer layer.

Discussion:

Hydatid disease is still a national problem in highly endemic countries and needs epidemiologic prevention for its eradication.[1] Hydatid disease is a parasitic infection caused by the larval form of echinococcus granulosus. Human become accidental hosts by eating tapeworm eggs. In adults the liver is the most common organ infected by larval form of Echinococcus. But in children lungs are the most common organ infected by larval form of the Echinococcus granulosus.[2] Incidence in male and female is equal.[3, 4]

Hydatid Disease is endemic in countries around the Mediterranean, Australia, South America

Figure 1: *Cyst*

Figure 2: *Aspiration*

Figure 3: *Cyst and daughter cysts*

and a Few areas in North America and the U.K.[4] The disease is not uncommon in Saudi Arabia. Although an epidemiological study has not been done, there appears to be an increasing incidence in this country. This may reflect better diagnostic facilities and improved medical care throughout the Kingdom. In endemic areas, the disease is more prevalent in rural communities and is usually acquired by living in contact with sheep and dogs. Our patient was from rural area and has contact with sheep and dogs. Most children tend to be infected by contact with dogs, although some are indirectly infected by eating food contaminated with parasitic eggs.[5]

Hydatid disease is found in all age groups with the highest incidence during the second,

Third and fourth decades of life. Children, even very young ones, can be affected and

May present with large hepatic cysts.[5, 6, 7, 8] In endemic countries, up to 25% of Hydatid disease is reported in children.[9, 10]

The preoperative diagnosis was based on a combination of clinical, serological and radiological assessments. In this case preoperatively mebendazole was given for 4 months and EG titer became zero. Surgery was than performed. Postoperative mebendazole was given for 4months. Surgery is the only effective treatment for hepatic Hydatid disease and is recommended for both symptomatic and asymptomatic patients[1,4,12]. Although PAIR has been widely used in recent years, still some pediatric surgeons believe in surgical approach in complicated cases[9]. Recently laparoscopic procedure is quite feasible to perform in Hydatid disease of liver and use of helical fastener allows effective omental flap fixation[10, 11].

Most surgeons will agree that proper management must include sterilization of the cysts, avoidance of spillage, evacuation of the cyst, and removal of the germinal layer. Numerous solutions have been used as scolicidal agents; however, some of these such as formalin and silver nitrate are toxic. Cetrimide (0.5-1%) is commonly used with no major side effects. Only local toxicity causing chemical peritonitis has been reported. Hypertonic saline 20% was used in our case. The management of the residual cavity is the most controversial aspect of surgical treatment as exemplified by the various procedures in this paper. In essence, cyst can be evacuated by the use of external tubes, by marsupialization or by internal drainage; alternatively they may be closed primarily without drainage using saline instillation, Capitonnage or omentoplasty .Reported postoperative complications include wound infection, hemorrhage, anaphylactic shock, peritonitis, subphrenic abscess and external biliary fistula.

In up to 50% of patients, collapse of the cyst cavity is not complete, and serologic tests may remain positive. Albendazole therapy may be extended for these patients, and complete cyst obliteration may not be seen for 2 to 3 years.[12]

In conclusion, hepatic Hydatid disease is not uncommon in children. An accurate diagnosis can be made by a combination of clinical, serological, and radiological examinations. At present, surgery seems to offer the best therapeutic option. In our opinion, primary closure of the cyst Cavity without drainage is best for patients with uncomplicated hepatic Hydatid disease. Because it is associated with a shorter hospital stay and a low complication rate. Health education in endemic areas will probably decrease the incidence of this parasitic infection in the future.

Prevention & Control

Cystic echinococcosis is controlled by preventing transmission of the parasite. Prevention measures include limiting the areas where dogs are allowed and preventing animals from consuming meat infected with cysts.

- Prevent dogs from feeding on the carcasses of infected sheep.
- Control stray dog populations.
- Restrict home slaughter of sheep and other livestock.
- Do not consume any food or water that may have been contaminated by fecal matter from dogs.

- Wash your hands with soap and warm water after handling dogs, and before handling food.
- Teach children the importance of washing hands to prevent infection.

Alveolar echinococcosis can be prevented by avoiding contact with wild animals such as foxes, coyotes, and dogs and their fecal matter and by limiting the interactions between dogs and rodent populations.

- Do not allow dogs to feed on rodents and other wild animals.
- Avoid contact with wild animals such as foxes, coyotes and stray dogs.
- Do not encourage wild animals to come close to your home or keep them as pets.
- Wash your hands with soap and warm water after handling dogs or cats, and before handling food.
- Teach children the importance of washing hands to prevent infection.

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