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Management of Echinococcosis Above Diaphragm in Thi Qar / Iraq

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ABSTRACT

Background Echinococcosis was firstly described by Hippocrates in the 4th century AD. Humans are an accidental intermediary host attacked by the larval stage of cestode tapeworm echinococcusgranulosus to develop cyst anywhere except nail & hair.
Objective To highlight on surgical procedures used in the treatment of cardiac hydatid cysts & the steps necessary for success.
Patients& Methods All patients with cardiac hydatidcysts were symptomatic of both sexes and age group underwent strict evaluation by history, examination &investigations. Surgery done for all with aid of cardiopulmonary bypass, with antihelminthics medications one week preoperatively.
Results Surgical techniques varies according to individual condition. Complications & outcome were analyzed as low morbidity and average hospital stay following surgery, no mortality occurred and all the patients discharged in good condition.
Conclusion The most specificity in cardiac hydatid cysts surgery is a conservative technique so it is need to keep in mind the necessity of avoid the complications of residual cavity.

1. Introduction

Hydatid disease is endemic in cattle raising area of the world, notably in the Mediterrnean countries, the Middle east, South America, Australia, & New Zealand (1). In 1962, Arturico& colleagues reported the 1st successful operation for cardiac hydatid cyst with cardiopulmonary bypass (2). In Iraq, animal hydatid cyst disease was recorded early by Babero et al (3) however the adult worm was reported earlier in the 1940s in the intestine of necropsied stray dogs (4). humanhydatidosis were about 6.3 person per 100,000 inhabitants in Iraq (5). Hydatid disease is a zoonotic infection caused by adult or larval stages of the cestode Echinococcus Granulosus (6). which resides in the jejunum of the dogs, eggs ingested by human beings so the embryo liberated in the duodenum to enter portal circulation & most of it trapped in the liver while rest scattered to other organs to develop to hydatid cysts. Cardiac involvement is not a common (0.5-2%) mostly due to myocardial contractions (7). Left ventricular wall is the most frequent site involvement through coronary circulation (8).

Involvement of the heart may be through the inferior vena cava to right atrial wall or transseptaly to left atrium or left ventricle or pass through pulmonary circulation to systemic circulation (9). Another way for the embryo to passes through the duodenal wall to periduodenal & perigastric lymphatic channels then thoracomediastinal & thoracic duct (10). The diagnosis can be difficult & must be suspected in any patient from sheep farming areas with a cystic tumour of the heart (11).

2. PATIENTS AND METHODS

From January 2012 through March 2020, 36 patients with cardiac hydatid disease underwent surgical treatment in our center. The clinical data on the patients are summarized in Table I. patients were 24 male and 12 were female; their ages ranged from 10 to 68

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years (mean, 36 years). All patients referred to our hospital as tertiary center from general hospital with cardiac nonspecific symptoms except one patient with intractable arrhythmia referred for ICD. physical examination, hematological test, biochemistry test & imaging study x-ray (PA & lateral view), echocardiography (TTE & TEE) &CT scan done for all beside the coronary angiography for one patient.

Large cysts are well visualized at CXR in frontal & lateral view. CT scan are other useful methods in differential diagnosis of cyst. Double wall is a specific sign that indicates the presence of an EC, daughter cysts & the density of cystic fluid.

Table 1. *Surgical planning based on preoperative clinical data & operative finding, perioperative surface echocardiography may be helpful in some situation.*

Patients N0	Age	Sex	Symptoms	Another organ
5	10-15	M	SOB for 10 months	NO
10	30-35	M	SOB & repeated chest infection for 2 months	Lung
2	65-70	F	SOB &arrhythmia for 2 weeks	NO
10	36-40	F	Chest pain & palpitation for 5 months	NO
4	5-10	M	Syncope & fever for 3 months	LIVER
5	16-20	M	Fever & SOB for 2 months	NO

3. MANAGEMENT

It is important to consider the location, number, and size of the cysts when choosing the operative approach and deciding whether to use CPB or to perform surgery on the beating heart. Subepicardial cysts, regardless of their extent, can be resected without CPB with satisfactory results, provided that the cysts are not connected with the ventricular cavity. In contrast, we consider it safer to perform surgery with the use of CPB. Extracorporeal circulation and cross-clamping of the aorta prevent embolization into the systemic circulation and enable a direct view of the hydatid cyst and the cardiac structures. In operations for cysts that are located in the right side of the heart, the pulmonary artery can be clamped in order to avoid pulmonary embolism.As a rule, the heart should not be manipulated before applying the cross-clamp.It is crucial to minimize the possibility of contamination before cysttomy by first localization of pericardial cavity with pad moistered by PVI , then performing puncture and needle aspiration of the cystic contents and washing out the fibrous cavity after enlargement of its mouth with scolicidal agents (such as hypertonic solution, iodine solution or alcohol) in all our cases we use PVI Table (2) , it is preferable to scrub with attention inside cavity. The technique of cavity closure should be according to location and extention of cyst after the redundant ectocyst excised table (3). all patients kept on anthelminthic therapy one week before & for 6 months to 2 years after surgery with liver function test monitoring.

Table 2. *percentage of the complications that occur with use of different scolicidal agent (drawing with permission)*

Complications	Povidone Odin 10%	Hypertonic saline solution	Alcohol
Recurrence rate	12.5%	30%	27.5%
Increase SGOT & SGPT	20%	27.5%	37.5%
Increased SB	5%	7.5%	12.5%
Postoperative collections	5%	7.5%	5%
Wound infection	12.5%	17.5%	20%

Table 3. *The surgical approach*

Patients no	Site	Extension	Dimension cm	State of pericardium	Operation
6	Apical IVS	Toward AVG	4 by 6	Tethering with diaphragm	Dor procedure
11	RV inferior surface	Toward endocardium	6 by 6	Localized tethering with diaphragm	Linear ventriculostomy closure & exposure through right atriotomy
9	RT atrium	Anterior surface	6 by 7	No adhesion	Cystectomy & marsupialization
6	LV	Wrapping all LV surfaces toward AVG	15 by 10	Generalized, more adhesion with diphragm	Ectocyst excision & linear closure
4	RV	Over RVOF	6 BY 3	Generalized, more anteriorly	Marsupialization

4. Results

The postoperative period was uneventful for all patients. The patients were discharged from the hospital between 6 and 14 days postoperatively (mean, 10 days). The patients' follow-up periods ranged from 6 months to 2 years (mean follow-up, 1.2 years). During the follow-up, no evidence of cardiac abnormalities or recurrences was detected during repeat echocardiography

5. Conclusion

1. Cardiac EC one of the leading causes to sudden death .
2. Cardiac hydatid disease is seen in any age and sex group although it is more common in adulthood.
3. Isolated cardiac involvement was seen in all our patients, but this may be due to the fact that we are a referral unit.
4. In this study, echocardiogram provided definitive diagnosis in 100% of the cases.
5. A variety of complications have been described with all sporicidal agents, but in our experience, povidone iodine solution provides the best protection with the least complications.
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6. We had no postoperative mortality in compare with other study which is form 0.5-4%. Postoperative progress is usually satisfactory and uncomplicated. Spillage occurs in one case (depends on location)

7. Cardiac hydatid cysts are rare and may present with a variety of signs and symptoms. The possibility of hydatid disease should be kept in mind, especially in endemic zones. Due to the high risk of associated complications, cardiac hydatid cysts should be removed surgically, even in asymptomatic patients. During the operation, measures should be taken to prevent perioperative embolization of a germinative membrane. Surgical excision under cardiopulmonary bypass is the treatment of choice.

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