ABDOMINAL HYDATID DISEASE AND ITS MANAGEMENT: OUR EXPERIENCE AT TERTIARY CARE CENTRE

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INTRODUCTION

Hydatid disease is caused by Echinococcus granulosus (dog tapeworm). While the disease is globally distributed, it is common in tropical countries like India. A more aggressive variant is caused by Echinococcus multilocularis, but is fortunately rare in India.¹

The worldwide annual incidence of cystic echinococcosis is 1-200 per 100,000 population². In India it is more common in the southern states of Andhra Pradesh, Tamil Nadu and Jammu and Kashmir.³

Dogs are the definitive host of E. granulosus; the adult tapeworm is attached to the villi of the ileum and secretes eggs in the dog’s faeces. Sheep are the usual intermediate hosts, but humans are an accidental host with a dead end to the parasite. The parasitic embryos hatch and enter the bloodstream⁴. From there they can have access to any organ system, but liver(75%) is the most common site as it filters the portal blood, followed by lungs(15%), spleen(5%) and other organs(5%).³ A visible hydatid cyst develops within three weeks and then slowly grows in a spherical manner. A fibrous capsule develops

Key Words: hydatid cyst, serology, echinococcus granulosus.

ABSTRACT

Background: Hydatid disease is caused by Echinococcus granulosus (dog tapeworm). While the disease is globally distributed, it is common in tropical countries like India. Ultrasound is the most common diagnostic modality. The treatment of hydatid cysts is primarily surgical. In older patients with small, asymptomatic, densely calcified cysts. PAIR (Puncture, Aspiration, Injection and Reaspiration) has become a more acceptable mode of treatment with outcomes almost similar as surgery and only chemotherapy.

Methods: In this retrospective study, data was collected from patients who presented with hydatid disease of the abdomen from a single surgical unit in tertiary care center over a period of 6 years from November 1, 2013 to October 31, 2019. All the cases were diagnosed based on clinical presentations, radiological studies and were supplemented by serology.

Results: 24 were male and 18 were female. But the distribution of being operated was 14 males and 13 females. Similarly conservative management was done in 10 males and 5 females.38 patients presented with the symptom of abdominal pain, discomfort and fullness.29 patients had a palpable mass in the right hypochondrium, 3 patients had a mass in the epigastrium and 3 patients had a mass in the left hypochondrium (1 was an enlarged spleen) and 1 patient had a right abdominal mass along with a pelvic lump. 6 patients had associated nausea and vomiting. 3 patients had abdominal pain, right hypochondrial mass and jaundice. All patients underwent an ultrasonography and CECT abdomen for radiological confirmation. Echinococcal serology was done in all the patients and was positive in 38 patients and negative in 4 patients.33 patients had cyst in the right lobe of the liver and 8 patients had cyst in the left lobe. 1 patient only had a splenic cyst and was treated with a splenectomy after proper vaccination. 5 patients had biliary cystic fistulas. The mortality was zero in the study group including in the ones undergoing surgery. Post-operative complications were observed in 7 patients. Out of the 15 patients managed conservatively, 10 were managed by PAIR and 5 patients were managed by chemotherapy with Albendazole.

Conclusion: We advocate the use of marsupilisation of the cyst and use of PAIR in patients who are unfit for surgery is also justified.

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around the cyst as a host reaction, called the pericyst. The cyst itself has two layers, an outer gelatinous membrane (ectocyst) and an inner germinal membrane (endocyst). In a definitive host, the scoleces develop into adult tapeworms but in the intermediate host, they can differentiate only into a new hydatid cyst, which is the exact replica of the mother cyst.4

Hydatid cysts are diagnosed in equal numbers of men and women at an average age of about 45 years. The clinical presentation is largely asymptomatic until complication occurs, with symptoms like abdominal pain, dyspepsia, vomiting, jaundice, fever, hepatomegaly, rupture into other viscera or an anaphylactic reaction.5

Ultrasound is the most common diagnostic modality. Simple cysts are well circumscribed with budding signs on the cyst membrane and may contain hyperechogenic hydatid sand. A rosette appearance is seen when daughter cysts are present. Water lily sign is seen when the endocyst detaches from the cyst. CT and MRI have similar findings and are used to see other sites of cyst, its extent and communications.

The treatment of hydatid cysts is primarily surgical, which consists of modalities like excision (pericystectomy), marsupilisation procedures, leaving the cyst open, drainage of the cysts, omentoplasty and partial hepatectomy. In older patients with small, asymptomatic, densely calcified cysts. PAIR (Puncture, Aspiration, Injection and Reaspiration) has become a more acceptable mode of treatment with outcomes almost similar as surgery and only chemotherapy. This study is aimed at our experience with hydatid disease and its various management options.

METHODS

In this retrospective study, data was collected from In-patient and out-patient records of patients who presented with hydatid disease of the abdomen from a single surgical unit in tertiary care center over a period of 6 years from November 1, 2013 to October 31, 2019.

The patient demographics including age, sex, residence and occupation was collected and the investigations and management strategies documented. All the cases were diagnosed based on clinical presentations, radiological studies and were supplemented by serology.

Inclusion criteria

- All the patients with diagnosis of hydatid disease greater than 12 years of age

Exclusion criteria

- All the patients with hydatid disease less than 12 years of age
- All the patients who refused treatment

RESULTS

Out of total 42 patients 24 were male and 18 were female. But the distribution of being operated was 14 males and 13 females. Similarly conservative management was done in 10 males and 5 females.

The age distribution of the patients has been tabulated below with most of the patients undergoing conservative therapy being old aged and unfit to undergo general anaesthesia because of the various co-morbidities.

<table>
<thead>
<tr>
<th>Age</th>
<th>20-40</th>
<th>40-60</th>
<th>60-80</th>
<th>&gt;80</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marsupilisation</td>
<td>15</td>
<td>10</td>
<td>2</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

*PAIR-Puncture, Aspiration, Injection and Reaspiration

Clinical Presentation

38 patients presented with the symptom of abdominal pain, discomfort and fullness. 29 patients had a palpable mass in the right hypochondrium, 3 patients had a mass in the epigastrium and 3 patients had a mass in the left hypochondrium (1 was an enlarged spleen) and 1 patient had a right abdominal mass along with a pelvic lump. 6 patients had associated nausea and vomiting. 3 patients had abdominal pain, right hypochondrial mass and jaundice. The patient with a mass in the left hypochondrium also complained of early satiety.

The patients were asymptomatic and were detected on screening ultrasonography for other conditions and referred to the surgical OPD for further management.

<table>
<thead>
<tr>
<th>Modes of Presentation</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABDOMINAL PAIN</td>
<td>38(90.4)</td>
</tr>
<tr>
<td>PALPABLE MASS*</td>
<td>36(85.7)</td>
</tr>
<tr>
<td>NAUSEA/ VOMITING</td>
<td>6(14.2)</td>
</tr>
<tr>
<td>INCIDENTAL</td>
<td>4(9.5)</td>
</tr>
<tr>
<td>ABDOMINAL PAIN + LUMP + JAUNDICE</td>
<td>3(7.1)</td>
</tr>
<tr>
<td>EARLY SATIETY</td>
<td>1(2.3)</td>
</tr>
</tbody>
</table>

*PALPABLE MASS -- Right hypochondrium-29
-- Left hypochondrium-3
-- Epigastrium-3
-- RHC-> Pelvis-l

All patients underwent an ultrasonography and CECT abdomen for radiological confirmation. MRCP was done in the 3 patients with jaundice to rule out any biliary communication preoperatively. None of the patients had an intrabiliary communication and the jaundice was only due to the compressive effects of the cyst.
Echinococcal serology was done in all the patients and was positive in 38 patients and negative in 4 patients. All the operated specimens were sent to histopathology for diagnostic confirmation.

**Table 5 Echinococcal Serology**

<table>
<thead>
<tr>
<th>Echinococcal serology</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>38</td>
</tr>
<tr>
<td>Negative</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
</tr>
</tbody>
</table>

The disease was found to be a single cyst in 40 of the patients with 2 patients in the operative group having multiple cysts. 1 patient had 2 cysts in the right lobe while the other patient had a cyst in the right lobe and a cyst in the pelvis.

33 patients had cyst in the right lobe of the liver and 8 patients had cyst in the left lobe. In the operative group the cysts were right sided in 22 patients and left sided in 5 patients. (figure 1)

1 patient only had a splenic cyst and was treated with a splenectomy after proper vaccination. (figure 2)

Out of the 15 patients managed conservatively, 10 were managed by PAIR (Puncture, Aspiration, Injection and Respiration) under sonographical guidance in view of being deemed unfit for general anaesthesia. 5 patients were managed by chemotherapy with Albendazole as the cysts were calcified and stable in size at less than 5cm. (dead cysts)

The operative procedure undertaken was marsupilisation (deroofing) of the cyst with scolicidal injection (cetrime solution 0.5%) and isolation of the operative field with scolicidal agent soaked laparotomy pads to prevent against intraperitoneal dissemination in case of inadvertent spillage of the cyst contents. All patients posted for surgery were given preoperative and postoperative chemotherapy with Albendazole (400mg) twice daily for 6 weeks and all necessary precautions were taken to manage an anaphylactic reaction.

1 patient underwent a splenectomy as the spleen was the only site of involvement.

5 patients had biliary cystic fistulas and the site of bile leak into the cyst cavity was identified and over sewn with Vicryl 2-0 and drain was placed in the cavity. The drains had only a serous/serosanguinous output and the drains were removed after 48 hours as no bile leak was observed.

The mortality was zero in the study group including in the ones undergoing surgery. Post-operative complications were observed in 7 patients and were related to the general complications observed after a laparotomy, with no biliary leaks observed in any of the patients at 48 hours.

1 patients had wound infection which was managed with opening of the sutures and daily dressing under appropriate antibiotic cover. 3 patients had a prolonged ileus and were managed with a Ryle’s tube and delayed feeding after the return of the bowel sounds.

2 patients developed right sided pleural effusion and 1 patient developed pneumonia. They were managed with rigorous chest physiotherapy and antibiotics in the pneumonia patient.

**DISCUSSION**

Hydatid disease caused by ingestion of Echinococcal eggs is an important zoonotic disease of humans and more so in an endemic country like India. The cysts gradually increase in size and can cause great morbidity to the patient and are a constant threat to life as a rupture may cause severe anaphylaxis.
In our study the sex distribution of the disease was 24 males and 18 females which is 57% and 43% of the study population respectively. The disease affects both sexes equally and is the case in our study as well which has almost the same sex distribution even in a limited sample size.

The presenting age groups also have a wide age range as the disease can affect any age group. The patients in our study predominate the middle ages as this is the working age group and hence has more chances of occupational exposure in occupations like cattle rearing and slaughter.

Most of the cysts observed in our study were solitary and were in the right lobe of liver (78%). A similar trend of involvement of the right lobe in 80.77% of the population was noted in the study by Illuri and colleagues and can be explained by the portal flow dynamics. The enlarging cysts cause local pressure effects and lead to the various symptomatology documented.

USG and CT scan have reported sensitivities of 85% and 100% respectively and are also useful in planning the operative approach. Serology with a sensitivity of 90% can be a useful adjunct in cases where doubts still persist about the nature of cystic lesions on radiological examinations.

PAIR is a very useful way of managing hydatid disease especially in those cases where the patients are unfit for general anaesthesia. In patients with a suspected dead cyst, a wait and watch policy can be safely followed with chemotherapy alone.

Although pericystectomy and limited liver resections are evolving as more radical surgeries in the west, where there is no dearth of trained hepatobiliary surgeons, due to the findings of decreased chances of recurrence. But marsupilisation of the cyst, which was the procedure of choice in our institute, is also an effective conservative procedure with almost similar chances of recurrence as a radical procedure if done carefully.

And although along with recurrence, post-operative bile leak is a major complication of hydatid disease due to the frequent occurrence of cystobiliary communication in the range of 6.6% to 26% of the patients. However in our study post-operative bile leaks were not observed probably due to the meticulous care taken in searching for the cystobiliary communications and overseeing them.

Other post-operative complications were similar to the usual complications observed in a laparotomy.

**Limitations**

It is a retrospective study with review of inpatient and outpatient records, with the inherent risk of bias due to the quality of information available.

Also the length of follow up of the patients was unequal and a small number of patients were lost to follow up, so the estimate of no recurrence might not be right. However we believe due to the care taken in only choosing PAIR in the elderly who were unfit for surgery and a meticulous technique in the operative group, recurrence might not occur.

**CONCLUSION**

Due to the disease burden in a country like India where very few surgeons trained in hepatic resections, we advocate the use of marsupilisation of the cyst which is a relatively easy surgery with equally good results if done carefully. Also the selective use of PAIR in patients who are unfit for surgery is also justified.

**References**


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