Review on 41 cases of Hydatid Disease

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Introduction

Hydatid disease is caused by the cestode Echinococcus granulosus. The human being, like sheep or pig is the intermediate host; dog or jackal being the definitive host harbouring the adult tapeworm. The ova discharged from the proglottis of the tapeworm is ingested by the intermediate host. The embryo is carried by the portal circulation into the liver and leads to the formation of hydatid cyst. If the embryo escapes portal-filtration, the disease may arise elsewhere like bone, lungs, kidney, brain etc. The embryo settled in the organ sets up fibroblastic reaction around it to produce hydatid cyst. The fully developed cyst has a central cavity containing clear fluid, which is nutrient to the developing embryo. The cyst is lined by germinal
layer. The brood capsules and scolices project from the inner side of this layer. This germinal layer is attached to the laminated membrane (Endocyst). The ectocyst is formed by compressed degenerated host tissue intermingled with fibroblasts. Unless infected, there is a definite plane of cleavage between the ectocyst and the endocyst. Scolex has a typical shape of the head of a mature worm. A collection of scolices is called hydatid sand.

Method and Material

41 cases of hydatid disease were admitted in Bir Hospital and Kanti Hospital during the last 5 years (Jan 1962–Dec. 1966). All the cases except one were admitted for the hydatid cyst of the liver with or without cyst elsewhere in the peritoneal cavity. One case was admitted for hydatid cyst of the bone with pathological fracture.

Age Incidence

Most of our patients were aged between 20 to 40 years. The age incidence is shown by the following table.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Count</th>
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<tbody>
<tr>
<td>0–10 yrs-</td>
<td>1</td>
</tr>
<tr>
<td>11–20 yrs-</td>
<td>4</td>
</tr>
<tr>
<td>21–30 yrs-</td>
<td>20</td>
</tr>
<tr>
<td>31–40 yrs-</td>
<td>13</td>
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<tr>
<td>40 yrs &amp; above-</td>
<td>3</td>
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The youngest patient was aged 6 years with a huge cyst occupying both lobes of the liver, needing thoraco–abdominal approach for their removal. The oldest patient was a male aged 62 years with calcified hydatid cyst in the right lobe of the liver.

Sex Incidence

In our series there were more ladies than gents. This is probably because our ladies are left to take care of the sheep and the dogs. There were 25 females and 16 males.
Sex incidence

Male 16 cases.
Female 25 cases.

Distribution in the Country

Almost all the cases came from Gandaki Anchal, & Dhawlagiri Pokhara district. This is the hilly part of our country, where sheep pasturing is practised in great number. Eight of the 41 cases came from Kathmandu valley. Only two of those eight patients state of having not gone out of Kathmandu valley. It is interesting to note that almost all the patients will have one or more pet dogs at home.

Mode of Presentation

SIMPLE CYST———36 CASES.

COMPLICATIONS OF THE CYST———5 CASES.
(A) INFECTION———1 CASE.
(B) BILIARY FISTULA———1 CASE.
(C) PRESSURE OVER THE INFERIOR VENA CAVA———1 CASE.
(D) PATHOLOGICAL FRACTURE———1 CASE.
(E) CALCIFIED CYST———1 CASE.

All the cases except one came with gradual painless enlargement of abdomen. On interrogation they will complain of pain in the shoulder region. The history will be suggestive of close association with dogs. There will be features of minor anaphylaxis e.g. repeated attacks of urticaria, itching, rashes and body pain with fever. One of the patients came with typical feature of acute cholecystitis. The gallbladder was palpable and tender. The patient was slightly jaundiced. One patient came with huge enlargement of abdomen with pitting oedema of both feet and legs due to pressure over the inferior vena-cava. The case with hydatid cyst in the bone came with pathological fracture of the humerus following swelling of the arm of one year duration. One of our cases of chronic cholelithiasis had asymptomatic calcified hydatid cyst in the liver. One patient was admitted for painful swelling of the abdomen with high
fever. He was very ill and toxic. About 12 cases in our series came with multiple swellings in the abdomen following laparotomy done elsewhere for a small cyst. On examination the patients were usually well nourished. The liver was enlarged in all the cases. The cysts were as big as a child's head. Hydatid thrill and fluctuation could be elicited in most of the cases.

Investigations:

The blood examinations revealed eosinophilia (count between 12-20%) in all the cases. In all the cases with acute cholecystitis the total leucocyte count was high (16,000/cu mm of blood with 86% of Polymorphonuclear leucocyte. The case with liver abscess had slightly raised W.B.C. count. The haemoglobin content of the patients were within normal limit except the case with huge cyst in the right lobe of the liver with pitting oedema in both the feet. The urine and stool examinations did not reveal any scolices or brood capsules. The plain X-ray of the abdomen showed elevated dome of the diaphragm and a large soft tissue shadow in the abdominal cavity. In one case calcified hydatid cyst was seen in the right lobe of the liver. The intra-dermal CASONI'S TEST was positive in all the cases. We had difficulty in finding antigen for the Casoni Test, but it was solved after removal of fluid before injecting formalin solution in the first case of our series. This fluid was collected, stored aseptically and has been used as antigen for the test with satisfactory result.

An immediate Casoni positive is shown by urticaria, erythema and oedema of the surrounding skin within 10 minutes of intradermal injection of the hydatid fluid. Unfortunately, we have not been able to perform Ghendini-Weinberg complement fixation test which is accurate in cent per cent cases. During the post-operative period, the progress of the closure of the cyst was checked by repeated radiological examinations and sometimes by injecting radio-opaque dye into the cavity through the drainage tube.

Treatment:

Most of the patients were fit for general anaesthesia and surgery. Blood transfusions were arranged in all the cases. The abdomen was
opened by a suitable incision. In three cases thoraco-abdominal incision was made. The cyst was mobilised. The rest of the peritoneal or pleural cavity were completely separated from the area by green coloured towels soaked in weak formalin solution. The cyst was tapped with a wide bored needle. About 200ml of fluid was withdrawn and 10ml of pure formalin was injected into the cyst cavity. It was left there for ten minutes. After ten minutes the cyst was opened, the fluid was sucked out. The germinal layer was removed completely by sponge holding forceps. The inner side of the cavity was inspected whenever possible. The cavity was swabbed with gauge soaked in weak formalin solution. A wide bore rubber drainage tube was put into the cavity which was brought out through a separate stab wound. The opening into the cavity was closed completely around the drainage tube. The other cysts were dealt with in the same way. In one of the cases we removed as many as 63 cysts in one sitting from the peritoneal cavity. The case with calcified hydatid cyst in the right lobe of the liver was also suffering from chronic choledolithiasis. On opening the abdomen for cholecystectomy a calcified mass was felt in the right lobe of the liver. The area was well peritonealised and hence left alone. In the case with chronic cholecystitis, we were in a mess. On opening the abdomen, there was a huge hydatid cyst in the right lobe of the liver. On opening the cyst, we detected a fistula communicating the cyst with the gallbladder. The contents of the cyst were removed. There were no stones in the gallbladder. The cyst and the gallbladder were drained separately. There was another cyst in the left lobe of the liver. It was dealt in similar fashion. The abdomen and the chest were closed in layers. The chest was drained with a water seal intercostal drain for 2–3 days. In the case with cyst in the bone, the germinal layer was removed intact and the limb immobilised in plaster cast for two months. The fracture united satisfactorily. During the post operative period all the patients received prophylactic penicillin and streptomycin for eight days. The fluid and electrolyte balance was maintained. Ambulation and physiotherapy were started from the second post operative day. The oral foods were allowed from the third day onwards. The stitches were removed on the 10th post operative day. The drainage tube will drain blood and bile stained fluid for 8 to 10 days. The sinus will discharge blood and bile stained
A fluid for a day or two and will then close. The opening closed completely by the end of second week. In case of chronic cholecystitis the cholecystostomy opening closed only after cholecystectomy done after two months. The case with the liver abscess the pus was drained the content removed and the cavity was drained. It closed in nearly 5 weeks time. The case with huge cyst in the liver with pitting oedema in the feet, the operation was postponed for a few days. The patient left the hospital against medical advice. Later on we were informed that his cyst was tapped and the patient collapsed the same evening.

Result:

39 cases out of 41 were operated. A weak solution of formalin was injected into the cyst, followed by evacuation of the cyst.

The cavity was drained in all the cases. We are lucky that we did not loose a single case by using this simple technique. The tube will stop draining at the end of 2 weeks.

The case with calcified hydatid cyst in the right lobe of the liver was left alone. The case with huge cyst the liver with oedema of feet was tapped elsewhere probably out of ignorance and the patient died of anaphylactic shock.

Result:

39 Cases ————————— OPERATED ————————— CURED.
1 Case ————————— LEFT AS SUCH.
1 Case ————————— UNFIT FOR SURGERY —— TAPPED ELSEWHERE —— DIED OF ANAPHYLACTIC SHOCK.

Discussion

The term hydatid means a collection of water. In fact it is the cysticercus stage of the tapeworm Echinococcus granulosus in the intermediate host. Few states that one in 300 hospital admission in the state of Victoria in Australia is due to hydatid disease. Pipkin, Rizk and Balakian presented a statistics from Jerusalem stating the rate of infestation in cattle as
follows: camel 67%, cows 47%, dogs 30% and sheep 20%. Trivedi working in Calcutta found out that 2% of the dogs harbour tapeworm. A report from Melbourne in Australia says that nearly 100% of dogs are infected. This will account for high infestation rate amongst the population. No such statistics are available to us. The dogs are infested by ingestion of infected sheep entrails. The human beings are infected by ingestion of eatables contaminated with dogs excreta.

Number of cyst:

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<th>8 CASES</th>
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<tr>
<td>SINGLE</td>
<td></td>
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<tr>
<td>MULTIPLE</td>
<td>33 CASES</td>
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In 33 cases the cyst were multiple either in the same organ or in the different organs. Dew also states that in over 70% of cases the cysts are multiple. In one of our cases we removed as many as 63 cysts in one sitting from the peritoneal cavity. In our series more females were affected than males. It is probably due to the fact that the girls are engaged to look after the farm, household and the dogs in our country. The cases present between the age groups 20—40 years with gradual painless enlargement of abdomen or with one of the complications like infection of the cyst, acute cholecystitis following rupture of the cyst into the gallbladder, oedema of the feet following pressure over inferior vena cava or fracture of the humerus. Some of the cases had multiple cysts in the abdomen following improper treatment for the single cyst elsewhere leading to widespread dissimination making our task still more difficult. The diagnosis was fairly simple. It was further confirmed by Casoni's intradermal test.

As there is no method of killing the organism in situ, the detection of a cyst is an indication for surgery. The principal of treatment is complete removal of parasite (true cyst) without disseminating the content into the surrounding tissue. Many methods of treatment varying from total excision of the cyst with the surrounding normal tissue, to simple injection of formalin into the cyst has been described. To us both these extremes were not suitable. Total excision is only possible if a small cyst occupies the left lobe of the liver. In our series most of the cases
have one or more cysts in the right lobe of the liver with or without other cysts elsewhere. Usually the liver tissue is so much compressed that they could be seen only after the evacuation of the content of the cyst. Hence, excision may be an ideal treatment but is frequently impossible. Right hepatic lobectomy for cyst occupying the right lobe of the liver is unnecessary and certainly will carry a very high mortality rate. Professor Ton-That-Tung et al of Vietnam described a series of cases of partial hepatectomies in a statistical study of 258 hepatectomies by a new operative technique with satisfactory result. We followed the simple line of mobilising the cyst injecting formalin solution followed by evacuation of the content completely. The cavity left is so huge that it is a problem to approximate the two walls. The interior of the cyst is swabbed with gauge soaked in formalin solution and cyst is drained by a wide bored rubber tube which is brought out through a separate stab wound. This tube will drain bile stained fluid for 8 to 10 days and will then close up completely. This tube is usually removed on the 12th postoperative day depending upon the amount of the drainage from the tube. The cavity however takes a few days more to be obliterated completely. Though a lot has been told about the secondary infection of the cavity through the drainage tube, we have been lucky so far not to have met any such complication. The problem of dealing with the asymptomatic cyst detected accidentally during the course of operation for other condition depends upon the state of the cyst, general condition of the patient. Left alone this cyst may enlarge to produce complications. Hence these cysts should be dealt with in the same way as described above. If however the cyst is fibrosed and calcified, adherent and has been asymptomatic for years, it should be left as such. The cyst in the bones or other organs are usually small and should be removed as completely as possible.

Iceland used to be the host bed of this disease. But now this disease has been completely eradicated from that country. Most of the cases in our series came from Gandaki and Dhawalagiri Anchals of our country, hilly districts in Western Nepal, where sheep pasturing is practiced in great number. In fact the disease is endemic in that part of our country, although a thorough medical statistic is lacking. It is sad that many lives are lost or handicapped by this disease which can be easily eradicated. This disease can be eradicated by health education
amongst the lay people, imposition of dog tax, destroying the stray dogs. The infection to the dogs can be prevented by burying or burning the diseased or dead animals. The hands should be properly washed after petting and caressing pet dogs. We hope that His Majesty's Government Health Department will launch a survey of this disease in the endemic areas and will take firm action on the above lines to eradicate this disease from our country.

Summary.

41 cases of hydatid disease have been described. Their mode of presentation, methods of investigation and the line of treatment has been described. The aetiological factors, method of treatment and the results have been discussed. The method for the prevention of this disease has been suggested.

Thanks.

1. Thanks to Dr. L. Poudayl for helping us in doing Casoni's Test in all the cases.
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