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Original Research Article.

Giant Hydatid Cysts of the Lung: Analysis and Surgical Outcome of 50 Cases

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ABSTRACT

Aims: We aimed to evaluate the results of surgical treatment of huge hydatid cysts diagnosed at our hospital. Ruptured cysts have caused severe complications. Perforation of very large cysts is always possible. These can result in fatal complications. We present our surgical experience with large hydatid cysts in this paper.

Materials and Methods: We retrospectively reviewed 167 patients diagnosed as hydatid cysts who were treated surgically. Among these, 50 cases were studied with a dimension of 10 cm or more. Age, gender, symptom, ruptured or intact, dimension, quantity and radiologic findings of the cases were determined. Incipiency of complaint, postoperative morbidity and length of hospital stay for all cases were assessed.

Results: The cases comprised 18 females and 32 males. The mean age was 20.20 ± 16.13 (5-52) years. Hospital stay for the huge and ruptured cysts group was 11.21 ± 4.04 days. The huge but unruptured cysts group had a hospital stay of 8.40 ± 2.48 days. All patients underwent thoracotomy. Cystotomy plus capitonnage in 52 (77.61%), decortication in addition to cystotomy plus capitonage in seven (10.6%), cystotomy in six (8.6%), cystotomy plus enucleation in one and primer closure in one were carried out. Postoperative mortality was absent; however, 18 cases were complicated; atelectasis was found in seven cases, prolonged air leakage in six cases, apical aseptic pleural space in three cases, empyema in two cases.

Conclusions: Immediate surgery is of choice in giant cysts. Possibility of complication and longer stay in the ruptured group is higher compared with simple cystic disease.

Keywords: Cysts, Hydatid Disease, Lung.

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INTRODUCTION

Since Hippocrates, hydatid disease has been a well-known parasitic disease caused by echinococcal cestodes, transmitted to humans via domestic carnivores and seen commonly in countries where agriculture and stockbreeding are widespread. It has remained an important public health issue in the undeveloped world and in the immigrant community of the developed countries.[1,2]

About 20-25% of embryos pass through the liver and around 20-25% reach the lungs via lymphatics or venous return. Cysts can enlarge and demonstrate earlier pathology within the lungs because of their elasticity compared with the other organs. Delay in diagnosis can lead to the hydatid cyst becoming very large and causing complications in treatment postoperatively.[3] Unruptured hydatid cysts can also be determined accidentally on radiological evaluation or noticed in those having nonspecific symptoms such as cough, dyspnoea and chest pain on examination. The clinical view of ruptured hydatid cysts is variable according to the unruptured hydatid cyst. Various circumstances, whether pulmonary hydatid cysts are ruptured or not, affect the clinical course and outcome. When ruptured, giant cysts can lead to respiratory obstruction because of an increase in fluid volume and membrane size. Intensity and diversity of the general symptoms depends on the characteristics of the hydatid disease, the duration of symptoms and surgical intervention.[4,5]

Very large hydatid cysts compress bronchial structures and exert pressure to the vicinity during their growth, causing severe complications compared with small cysts. Giant cysts are prone to rupture due to their volume and may complicate respiratory distress, necessitating urgent intervention. Surgery for giant cysts is difficult compared with small ones, and the surgeon may encounter further complications.

We aimed to evaluate 66 cases of giant hydatid cysts across in-clinic, postoperative complications, morbidity, hospital stay and surgical procedure.

MATERIALS AND METHODS

167 cases of hydatid disease were evaluated retrospectively. 50 of these cases were of 10 cm or greater in dimension, and were rated as giant cysts or huge cysts. The age, gender, symptoms, ruptured or unruptured, dimensions, image findings and hospital stay of the patients were obtained from charts.

Clinical examination followed by laboratory tests, plain chest x-ray (CXR), computerized tomography (CT) and ultrasonography (US) were used for the diagnosis. Some serologic tests were however studied in selected cases.

The surgical procedure of choice was cystotomy + capitonnage in 77.61%. Double-lumen endotracheal intubation in those older than 13 years and unillumined for the younger patients were preferred during anaesthesia. Bronchial blocker was used for 25 of the latter group. During the operation, the cyst was surrounded by povidone iodine soaked gauze sponges in order to prevent the spread. No scolocidal agent was given into the cyst. Both giant cysts and small cysts were compared using the X^2 test. Morbidity of the ruptured huge cysts and the no ruptured huge cysts was also compared with the X test. Comparison for intensive care unit and hospital stays of both groups was calculated using the Mann-Whitney U test.[6,7]

Albendazole treatment of 10 mg/kg for 6 months was given to those having an indication during the postoperative period. Medication for 28 days was followed by a 14-day pause up to 6 months. Liver function tests were checked at follow-ups. Recurrence was not seen.

RESULTS

The cases were composed of 18 female and 32 male patients. The mean age was 20.20 years. The mean hospital stay of 24 cases with ruptured giant cysts was 11.21 ± 4.04 days and 8.4 ± 2.48 days for 43 cases with unruptured giant cysts (P = 0.001). The hospital stay for all cases with giant cysts was 9.42 ± 3.39 days and 9.69 ± 4.25 days for non-giant cysts (P = 0.824) . The mean symptom duration was 120.46 days. Cases were on the left side in 18 cases (02 ruptured) and on the right side in 32 cases (04 ruptured). The most common symptoms included chest pain and dyspnoea. Cystotomy + capitonnage in 38 cases (76%), cystotomy + capitonnage + decortication in 8 cases (16%) and cystotomy in 04 cases (8%) was performed. There was no mortality. Atelectasis and prolonged air leak were the most common postoperative complications. The cysts located in the upper lobes caused postoperative expansion defects (aseptic apical space) as those located in the lower lobes were responsible for atelectasis. The quantity of cysts was defined by imaging methods and surgery. All had one cyst, apart from three cases with two cysts. Hydatid disease was found together in liver and lung in eight cases, and in the liver and spleen in addition to the lung in one case.

DISCUSSION

The primary cause of the hydatid cyst infestation into humans is through ingestion of water or food contaminated by carnivores' faeces containing embryos. The eggs are opened as they leave the stomach and the developing embryos move through the intestine. Most of them are filtered by the liver; however, those passing reach the lung where they become lodged. Some embryos escaping from the lungs are responsible for extrapulmonary disease.[7,8] Embryos may also become lodged in lungs and by-pass the liver through the lymphatics. Even if the disease has been successfully treated in the lungs, it may travel through bloodstream and become lodged in other organs.[7-9] The lungs are the second most common location for the parasite, and have a soft structure that encourages a progressive growth rate.[9] The disease is diagnosed and symptoms become evident due to neighbouring bronchial and cardiovascular structures. Therefore, it is very rare that the cyst grows asymptomatically. Hydatid disease has been seen in both genders, with a male predominance in our study group. Enlargement of the cysts in the younger age group may be dealt with better due to more elasticity of lungs compared with the old patients. In addition, adequate respiration of the remaining lung tissue from the cyst is available in young patients, but is difficult in older patients. Therefore, the size of the cysts in young patients may reach very large dimensions.

Symptoms and findings of giant hydatid cysts, especially when ruptured, are more severe than small cysts. The clinical presentation of ruptured cysts varies according to where the rupture occurs. The cysts commonly rupture into the bronchial tree. The remainder of the collapsed parasitic membrane is the source of recurrent infections in many cases. Cough, sputum, haemoptysis, pain, dyspnoea and fever are most common symptoms of pulmonary hydatid cysts. We found chest pain and shortness of breath as the most prominent symptoms in this study.[9] Those having evidence of haemoptysis were defined as ruptured with the aid of radiological findings as well as intraoperatively; therefore, haemoptysis can be the pathognomonic for the rupture of hydatid cysts.

Radiological evaluation in diagnosis is more helpful than other tests because there is no specific test for the hydatid disease. Plain CXR is mandatory for diagnosis. A round or oval shape and well-defined margins on CXR identify the disease. Complicated cysts however may imitate any other pulmonary lesion. CT is also more capable of displaying both intact and complicated cysts. Alteration in shape after the rupture yields a solid view and should be differentiated from malignancies and other solid tumours. CXR, CT and US were routine imaging tools in our practice.[9,10] CT gives more information about the spatial structure of the cysts and lungs. In addition to imaging, some serologic tests such as immune hemagglutination are useful for definition of the diagnosis. We did not profit by these tests due to their false (+) and (-) results. Surgical treatment is still current for pulmonary hydatid disease, whether symptomatic or not. Giant hydatid cysts create difficulties in surgical practice compared with small cysts. Capitonnage procedure is difficult to use in the space remaining in the lung; however, it is easily carried out in small cysts.[11] Not being able to perform adequate capitonnage leads to septated cavities, thereby fluid collections followed by future infections and eroded bronchi and their rupture. Cystotomy + capitonnage were carried out in 76% of the cases and closure suture of bronchial openings in very large cysts in order to prevent atelectasis only in 8.96% was done but capitonnage. No postoperative complication was seen in these cases. We performed cystotomy, capitonnage and decortication altogether in 10.6% of the cases. Resection was not required.

Some complications such as haemothorax, wound infection, atelectasis, pneumonia, dyspnoea, empyema and even sepsis

were possible during the first week of surgery. Bronchopleural fistula and residual cavity are commonly seen after the first week. Morbidity of giant cysts is 5% higher compared with small cysts. Prolonged air leakage in 10-19%, empyema in 6%, aseptic space and pneumonia has been seen in only a few cases. In our study, atelectasis in five cases (10%), prolonged air leaks in five cases (10%), apical aseptic air space in three cases (6%), empyema in two cases (4%) and haemoptysis in one case (2%) were observed.

Infection or inflammation in the neighbouring lung parenchyma affects wound healing and can lead to postoperative complications such as prolonged air leaks, empyema and pneumonia in the ruptured cysts. Those having the ruptured cyst need more antibiotic and supportive therapy preoperatively. Therefore, postoperative tube thoracostomy may take time in these patients. The incidence of cyst rupture rate was reported at 52% in 26 patients on albendazole treatment. Chemotherapy with albendazole preoperatively is not suitable for some selected cases (e.g., multiple small cysts) in favour of surgery as the rupture event increases morbidity, hospital stay and resection rate. Albendazole was not given to patients except those ruptured in 25 and thought to be disseminated preoperatively in five cases. It was administered as 10 mg/kg twice daily.[12] The treatment was undertaken for 4 weeks, followed by a pause of 2 weeks. Liver function tests were followed-up as controls. The treatment of those having elevated test results was stopped until normal levels were achieved. Chemotherapy took 6 months. Recurrence was seen in two cases that did not take proper medical therapy. In conclusion, the hydatid disease remains a public health issue in the developing world. Invasive diagnostic procedures should be avoided as they can lead to the rupture of the cysts. Giant hydatid cysts should be operated on due to the risk of rupture without delay.[12-14] Precautions must be undertaken during surgery in order to lessen morbidity. Some difficulties are still present regardless of surgical experience. Capitonnage may not be carried out to avoid atelectasis and pleural space, especially in the upper lobes in huge cysts. The primary treatment of choice in large cysts is surgery. Chemotherapy alone in place of surgery is not adequate management.

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