

Anaesthetic Management Of A Case Of Bilateral Hydatid Cysts Of The Lungs With Hepatic Hydatid Cysts Posted For Cyst Excision

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Citation

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Abstract

Bilateral pulmonary hydatid cysts surgeries pose a challenge for anesthesiologists due to the difficulty in ventilation of both the lungs and the need for providing a one lung ventilation using a double lumen tube in order to facilitate the surgery over the lungs. Here we report a successful anaesthetic management of a rare case of bilateral pulmonary hydatid cyst along with hepatic hydatid cyst who underwent cyst excision.

INTRODUCTION

Hydatid disease or echinococcosis is an infection of humans caused by the larval stage of *Echinococcus granulosus*, *E. multilocularis*, or *E. vogeli*. *E. granulosus* produces unilocular cystic lesions, is prevalent in areas where livestock is raised in association with dogs (3). It is in the liver that the majority of the cysts (in about 65% of case) are found. Next in frequency of infection are the lungs (about 20%), brain (1%), peritoneal cavity (8%), kidneys (3%) and bone marrow or other organs. Slowly enlarging echinococcal cysts generally remain asymptomatic until their expanding size produces a mass effect on the involved organ giving rise to symptoms. Intraoperative anaesthetic management includes the understanding of the anatomical site of the cyst and the problems associated with ventilation due to surgery over the anatomical site and the possibility of cyst rupture during surgery which may lead to anaphylaxis. Here we report the successful conductance of anaesthesia in a patient operated for bilateral pulmonary hydatid cyst with hepatic hydatid disease.

CASE REPORT

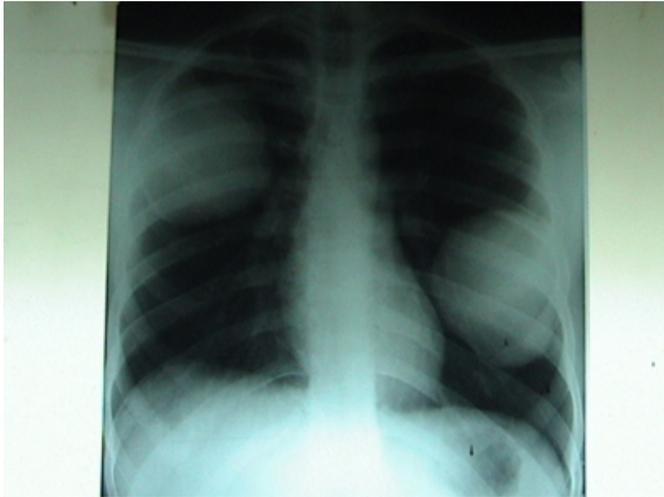
A 22 year old male patient presented with complaints of cough with expectoration since six months and a few episodes of hemoptysis since three months. The patient was diagnosed to have hydatid disease of the lungs and the liver and was posted for cyst excision. The patient was taking tab. albendazole 400mg BD and tab. Praziquantel 600mg BD

since six months. Clinically airway was MPC.Gr.1 and his vitals were within normal limits.

On examination his respiratory system showed decreased breath sounds in the right upper lobe areas of the lungs and also the left lower lobe areas. These lung areas also showed increased vocal fremitus and a dull note on percussion. Per abdominal examination showed hepatomegaly with the liver border around 4 cms below the right intercostals margin on percussion. The cardiovascular examination was within normal limits. All routine investigations including serum electrolytes were within normal limits. The liver function tests, serum albumin and bilirubin levels were also within normal limits.

CXR showed two large 7x8 cms cystic lesion in the right upper lobe and the left lower lobe. ECG was within normal limits.

Figure 1



CT report showed 8.3x6.8cm cyst in the right upper lobe of the lungs and a 8x7cms cyst in the left lower lobe of the lungs and a 10x9cms cyst in the liver. The CT guided FNAC of the liver cyst confirmed the diagnosis of the hydatid cyst. Pulmonary Function Tests were also done and it showed normal flow volumes and an MVV of 78.9% adequate for general anaesthesia.

After taking consent for the surgery and after adequate starvation the patient was taken inside the OT and a large bore peripheral venous line was secured after attaching the cardio scope and the pulse oximeter to the patient. An arterial line was secured in the left radial artery in order to monitor the BP. Then a triple lumen IJV catheter was secured in the right IJV in order to monitor the CVP and for administering fluids. After premedicating with inj. Midazolam 0.03mg/kg.I.V. and inj. Fentanyl 2 microgm/kg.I.V. the patient was induced with inj. Propofol 2mg/kg and inj. Pancuronium 0.1mg/kg and the patient was intubated with a 37 Fr left sided Double Lumen Tube. The position of the DLT was confirmed with a fiber optic bronchoscope and the one lung ventilation checked by clamping the tracheal and the bronchial lumens alternatively. Inj. Hydrocortisone 100 mg iv and inj chlorpheniramine 1 amp iv was given before the incision as a cover for anaphylaxis.

With a sternotomy incision the left lung was operated on first and so the bronchial lumen of the DLT was clamped on first and only the right lung was ventilated. Afterwards the tracheal lumen of the DLT was clamped for the surgery over the right lung so that only the left lung got ventilated. A right sub costal transverse abdominal incision was taken for the

surgery over the liver.

During the excision of the liver cyst the clamp over the DLT was removed and both the lungs of the patient were adequately ventilated. Intraoperative the patient was maintained on 100% oxygen, 0.5% isoflurane., inj Pancuronium 0.1mg/kg/hr, inj Midazolam 0.05mg/kg/hr, inj. Fentanyl 2 microgm/kg/hr. Throughout the surgery ETCO₂ monitoring was done and serial Arterial Blood Gas analysis was done. Throughout the surgery the oxygen saturation, ETCO₂ and the Arterial Blood Gases remained within normal limits.

After the surgery was over the DLT was replaced with a 9.0 no. Portex cuffed endotracheal tube and a thoracic epidural catheter was put at the level of T8-T9 and inj Fentanyl 50 microgm diluted to 10 cc by normal saline was administered epidurally for post operative analgesia. Anaesthesia was reversed with inj. Glycopyrrolate 8mcg/kg and inj. Neostigmine 0.05 mg/kg and the patient was extubated. The patient was then shifted to the intensive care unit for observation. Recovery was uneventful.

DISCUSSION

Hydatid disease or Echinococcosis is an infection of humans caused by the larval stage of *Echinococcus granulosus*, *E. multilocularis*, or *E. vogeli*. *E. granulosus*, which produces unilocular cysts, is prevalent in areas where livestock is raised in association with dogs. The definitive hosts are dogs that pass eggs in their feces. Cysts develop in the intermediate hosts—sheep, cattle, humans, goats, camels and horses for *E. granulosus*.

When a dog ingests beef or lamb containing cysts, the life cycle is completed. After humans ingest the eggs, embryos escape from the eggs, penetrate the intestinal mucosa, enter the portal circulation, and are carried to various organs, most commonly the liver and the lungs. Larvae develop into fluid filled unilocular hydatid cysts that consist of an external membrane and an inner germinal layer. The cyst expands slowly over a period of years. Slowly enlarging echinococcal cysts usually remain asymptomatic until their expanding size elicits symptoms due to mass effect. The liver and lungs are the most common sites of these cysts. Clinical manifestations of hepatic hydatid disease include abdominal pain or a palpable mass in the right upper quadrant. Rupture of a hydatid cyst may produce fever, pruritus, urticaria, eosinophilia, or anaphylaxis. Pulmonary hydatid cysts may rupture into the bronchial tree or peritoneal cavity and

produce cough, chest pain or hemoptysis (3). Surgery has traditionally been the principal definitive method of treatment. Risks at surgery from leakage of fluid include anaphylaxis and dissemination of infectious scolices. The latter complication has been minimized by the instillation of scolicial solutions like hypertonic saline or ethanol, which may cause hypernatremia, intoxication or sclerosing cholangitis. Medical therapy with albendazole alone for 12 weeks to six months results in cure in 30% of patients. Percutaneous Aspiration, Infusion of scolicial agents, and Reaspiration (PAIR) can be used instead of surgery in many cases.

Anaesthetic implications of management of a case of hydatid cyst of the lungs include the problems associated with one lung ventilation (OLV) and the problems associated with cyst rupture and dissemination. Several operative techniques are used to manage hydatid cyst of the lung and their main objective is resection of the intact or the complicated cyst, while preserving as much lung as possible. Bronchi opening into the pericyst cavity allow for discharge of hydatid liquid. Furthermore operative manipulations can force fragments of laminated membrane or small daughter cysts into the bronchial tree. Such extruded solid fragments lodge in bronchiof the same or opposite lung resulting in acute obstruction of airways. Such complications can be avoided by the use of One Lung Ventilation (OLV) technique.

Uncontrolled spillage of cyst contents may cause secondary pleural or bronchogenic hydatidosis. This complication is also prevented by OLV. Intentional collapse of the lung on the operative side facilitates most thoracic procedures but some complicates anaesthetic management. The most frequent complication of OLV is hypoxemia. Most commonly this complication is due to ventilation-perfusion mismatch resulting from the combination of position, OLV and lung disease. Moreover the DLT can be malpositioned. Difficulties resulting from improperly positioned endobronchial tubes include failure to collapse the operative lung; difficulty in ventilating one or both the lungs; air entry into the wrong lung; and air trapping and unsatisfactory deflation of the lung. Fiberoptic bronchoscopy can significantly reduce such malpositioning. Traheobronchial

trauma and hemorrhage are the other complications(4)

In our patient, after induction of anaesthesia, the trachea and the main bronchus of the healthy side were intubated with a 37 Fr (French) Polyvinylchloride left sided endobronchial tube. Bilateral and one lung ventilation were checked and confirmed by auscultation and fiber optic bronchoscopy. End Tidal Carbon dioxide (ETCO₂), peripheral oxygen saturation (spo₂), Electrocardiogram (ECG) and blood pressure were continuously monitored. Airway pressures were monitored throughout the operation. Arterial Blood Gases were also monitored throughout the operation.

We conclude that management of a case of hydatid disease of the lungs include thorough understanding of the respiratory physiology of the One Lung Ventilation (OLV) and the proper positioning of the double lumen endobronchial tube and continuous monitoring of the saturation, ventilation and the blood gases to prevent the associated complications.

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