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Anaesthetic Management of intracranial Hydrated Cyst, A Patient of Disseminated Hydatid Disease - A Case Report

KEYWORDS: Hydatid disease, intracranial, daughter cysts, disseminated cysts, craniotomy, anaphylaxis.

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ABSTRACT *Hydatid disease is a worldwide zoonosis affecting humans.Humans are infected by the ingestion of food and milk , contaminated by dog faeces or direct contact with dogs.*

We report a case of disseminated hydatid disease scheduled for surgery of gap between intracranial hydatid cyst in the parietal region.

A 35 year old female was admitted to neurosurgery department , With complained of severe generalized intermittent headache since 1 year and seizure since 3 months . She had been operated for pericardialhydatid cyst 2 year back .

Hydatidcyst was removed by right parietal craniotomy with all anti anaphylaxis measures .

After the surgery patient was extubated and shifted to the ICU. Recovery was uneventful.

INTRODUCTION -

Hydatid disease is an infection of humans caused by the larval stage of a tapeworm of the genus Echinococcus. E.granulosus produces unilocular cysts, is prevalent in areas where livestock is raised in association with dogs.It is most common form found in humans produce cystic lesions. (1-4) .

The definitive host in the life cycle of E. granulosis is usually the dog or some other carnivorous that pass eggs in their feces. This can contaminate the ground where sheep, cattle, goats, camels and horses grazes. They act as the intermediate hosts . Humans can also become an intermediate hosts through ingestion of contaminated material or contact with a definitive host. Hydatid disease can affect almost any organ system in the human body.Liver is the most frequently involved organ . Lungs is the second most common site The lower lobes affected more than the upper lobes. Lung involvement can be the solitary or in combination with liver disease .

Other rare sites are - pancreas, kidneys, adrenals, bladder, spleen and retroperitoneum.

Brain is also a rare site and only 2% of intracranial masses are caused by hydatid disease (3-6).Any part of the brain can be affected, but supratentorial part word in place of disease is more common than infratentorial part word in place of disease. Children are affected 2-3 times more commonly than adults (6-8). Cysts tend to be unilocular with the content isointense to CSF at CT and MRI. Large lesions cause marked mass effect but lacks surrounding edema.This feature helps to differentiate hydatid cysts from cystic neoplastic lesions or abscesses. solitary lesion found in 90% of cases (9). CT and MRI lead to early and correct preoperative diagnosis.

CASE REPORT –

A 35 year old female was scheduled for intracranial hydatid cyst resection, presented with complained of severe generalized intermittent headache since 1 year and seizure since 3 months . she was a known case of hydatid disease.Cysts were disseminated in brain, liver ,spleen,lungs,kidney and heart. She had been operated for pericardium hydatid cyst 2 years back in S.M.S. hospital.

Examination revealed women of average built, weight 40 kg. She was fully conscious and oriented to time, place and person. Airway examination revealed MPG grade II instead of 2. scar mark present on sternum due to cardiac surgery. 2D-echo was normal with 55% EF. BP was108/78 mmHg and pulse 95/min in sitting position. she had the H/O breathlessness on routine activity. Breath sounds decreased in the right upper lobe areas of the lungs and also the left lower lobe area with bilateral crepts due to hydatid cysts in both lungs.These lung areas also showed a dull note on percussion. Per abdominal examination showed hepatomegaly with the liver border around 4 cms below the right intercostals margin on percussion. All routine investigations including serum electrolytes were within normal limits.pulmonary Function Tests showed restrictive pattern and an MVV of 78.9% . On neurological examination -Reflexes on both sides were exaggerated with extensor planter response. Sensory system was intact.

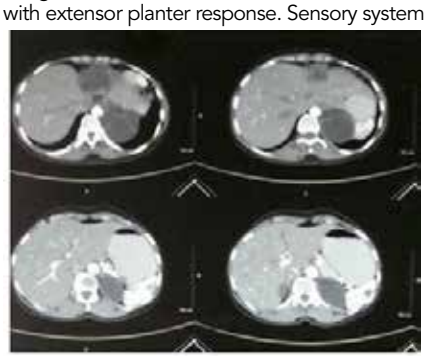

Figure no.1- CT abdomen - hydatid cyst in liver,spleen and kidney.

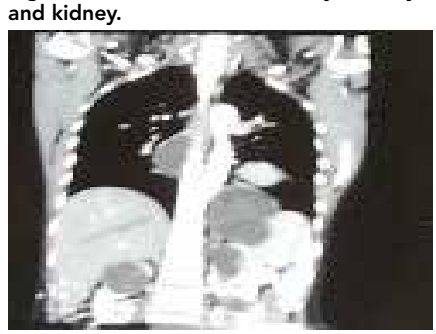

Figure no.2- CT thorax showing hydatid cysts .

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MRI brain showed well defined very large sized hyperintense cystic multiloculated lesion in right parietal region, Involving mainly right periventricular white matter compressing atria of right lateral ventrical region, indenting thalamus /corpus callosum inferiorly with mass effect with well defined wall, measuring approx. 51x 36x 45 mm. . No surrounding cerebral edema.

Figure no.3 - Flair MRI showing multiloculated cyst in right parietal region.

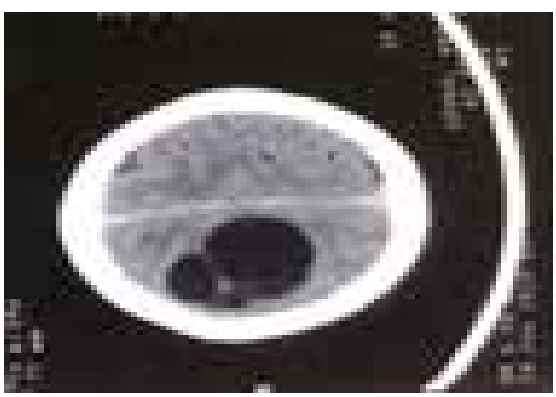

Figure no.4 - CT brain showing hypodense hydatid cyst

ANAESTHETIC MANAGEMENT

In the operating room all routine monitoring was started. Anti anaphylaxis measured like Injection adrenaline, antihistamine, and theophylline and steroid were kept ready. Inj. Hydrocortisone 100 mg inj, Dexamethasone 8mg IV and inj chlorpheniramine 45 mg iv was given before the incision as a cover for anaphylaxis.Other precautions, hypertonic saline and formalin were kept stand by for combating allergic reactions for spillage from the cyst if it turns out . Two wide bore cannulas for rapid infusions of IV fluids and drugs, An arterial line in the left radial artery in order to monitor the BP and a triple lumen catheter was secured in the right suclavian vein in order to monitor the CVP and for administering fluids. General anesthesia was induced , after premedicating with inj.Midazolam 0.03mg/kg.I.V.,inj. Glycopyroate 0.005 mg/kg I.V. and inj. Fentanyl 2 µ/kg.I.V, with inj.thiopentone 5mg/kg instead of 5mg/kg thiopentone IV and inj.suxamethonium 75mg IV instead of 75 mg suxamethonium IV and intubated with 7.5mm instead of 7.5 size cuffed PVC endotracheal tube . Anaesthesia was maintained with injection fentanyl, Isoflurane up to 0.6 MAC and inj. vecuronium bromide instead of vecuronium bromide. Hyperventilation was adopted to keep EtCO2 below 30 mmHg.

Right parietal craniotomy was performed . Under the dura, a glistening, yellowish coloured, very thin walled was seen which was removed, cyst have multiple daughter cyst. There was sudden fall of BP after removal of cyst (80/56 mm/Hg) which was managed by iv fluid, blood and dopamine support.

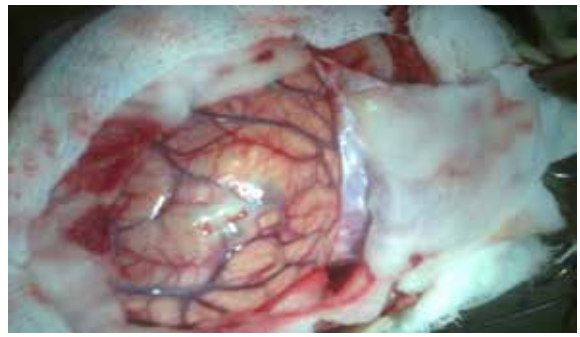

Figure no. 5- showing yellowish white hydatid cyst

Figure no. 6- hydatid cysts after removal .

Intraoperatively the oxygen saturation, ETCO2 and the ABG remained within normal limits. Postoperatively anaesthesia was reversed with inj.Glycopyrrolate 8mcg/kg IV and inj.Neostigmine 0.05 mg/kg IV and the patient was extubated with uneventful recovery and shifted to the ICU for observation. Perioperatively corticosteroids were used which were tapered off and stopped on Day 8 . She was placed on albendazole regimen (10 mg/kg twice orally daily for 3 months).

DISCUSSION

Giant intracranial hydatid cyst is very rare, with reported incidence of 1-2% of all cases. Hydatid cyst mainly located in parietal lobe, in supratentorial compartment.(11).

Other less common sites are skull, cavernous sinus, eye ball , Pons, skull, extra dural, cerebellum and ventricles. Intracranial hydatid cysts are slow growing and become symptomatic when become very large. The growth rate of hydatid cyst has been reported between 1-5cm per year. (12)

Cerebral hydatid cyst is more common in paediatric population, probably related to a patent ductus arteriousus(6).

Solitary intracranial cysts are common than multiple intracranial cysts.(13). There was no evidence of direct contact with dog in our patients. Intracranial hydatid cyst may be primary or secondary. Primary cysts are formed as a result of direct infestation of brain without evidence of involvement of other organs. Primary cysts are fertile as they contain scolices and brood capsules and rupture causes recurrence. The secondary cyst results from traumatic or spontaneous or per operative rupture of a primary cyst. Secondary cysts are infertile. The patient with a solitary giant intracranial hydatid cyst usually presents with progressive focal neurological deficit and features of raised intracranial pressure(11). Presentation is usually sub acute. A minority of patients may also have seizures.

MR spectroscopy and MR diffusion weighted imaging might help in diagnosis of intracranial hydatid cyst (2,10). A variety of surgical techniques is used for removal of the hydatid cyst

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(14). One option is direct puncture and aspiration of the cyst fluid through a small hole in the cyst wall, and expulsion of the cyst, this was used in our case. The popular technique is Dowling's technique of hydrodissection in which normal saline irrigation is used to deliver the cyst intact(15). This is possible because of minimal adhesions around the cyst . The incision and retraction of the cerebral cortex to reach the cyst wall may produce variable results from no neurological deficit to transient or permenant demage.

Accidental rupture of the cyst may result in spill over of the contained fluid and scoleses which may causes severe anaphylaxis. Hypertonic saline and formalin have been injected in the cyst in an effort to control this risk with variable success.

Medical treatment with albendazole seems is beneficial both pre- and post-operatively.

The main concern during operation was haemodynamic unstability during manipulation and resection of the cyst. Another concern is the awareness of anaesthesia due to decrease the concentration of inhalational anaesthetic agent when there is fall in blood pressure . It is better to start minimum inotropic support before induction, titrates to target a mean arterial pressure above 65mmhg and maintained with minimum concentration of inhalational agent.

Anaesthetic challenges :-

- Hemodynamic instability.
- Rupture of cysts intraoperatively may lead to anaphylaxis.
- Anaesthesia Awareness
- Rarely Scolicidal toxicity

CONCLUSION- The main concern in hydatid cyst resection is Allergic reactions after the rupture that can be range from mild hypersensitivity to fatal anaphylactic shock. A combination of thorough preoperative evaluation, intensive monitoring, and a good technique that helps maintain stable intraoperative hemodynamics helps in achieving a successful outcome in such patients.

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