

CASE REPORT

## Hydatid Cyst in Orbit- Imaging Presentation with Surgical and Histopathological Correlation

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### ABSTRACT

Hydatid cyst is a common parasitic disease found mostly in developing countries, causing diagnostic and therapeutic challenges to the radiologists and physicians. Orbital hydatid is quite rarely reported in literature (<1%). Surgical excision is the treatment of choice. Care should be taken pre-operatively to avoid the risk of rupture with the help of imaging modalities depending on the location of hydatid cyst. Our objective is to report an unusual case of hydatid cyst in orbit with help of superior imaging modality like magnetic resonance imaging. This was successfully managed by complete surgical resection. Further, histopathological diagnosis led us to prompt diagnosis.

**Keywords:** Hydatid Cysts, Magnetic Resonance Imaging (MRI), Orbit, Histopathology, Proptosis.

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### INTRODUCTION

Echinococcus granulosus is the culprit parasite behind hydatid cyst.<sup>1,3</sup> It is more prevalent in under-developed countries and rural areas. Systemic involvement is common with hydatid cyst commonly seen in liver; however hydatid cyst can also be seen in orbit. Children and young adults are mostly infected by intra-orbital hydatid cyst.<sup>4</sup> It is secondary to development of echinococcus granulosus tapeworm in orbit, whose definite hosts are dogs with sheep being intermediate hosts.<sup>5,6</sup> Man is only an accidental host. Intra-orbital hydatid cysts are rare; with only less than 1% of all systemic involvement being reported in literature.<sup>7</sup> There is always a high chance of complications like hydatid cyst rupture, spread or other inflammatory diseases. So, treatment lies in almost complete excision of cyst. We present similar case which presented to our department through our case report which was initially suspected as a case of orbital tumor. This was followed after surgery on histopathology, which confirmed our preliminary diagnosis.

### CASE REPORT

A 52 years female resident of Afghanistan presented with right eye proptosis, watery eye discharge, redness, swelling and itching. The patient had no obvious history of cattle farming. There was although history of minor eye injury. The eye symptoms of proptosis and watery

discharge rapidly evolved over the period of 9 months. Clinical examination showed a non-pulsatile, irreducible mass with right monocular blindness, redness of overlying skin and right papillary edema (Figure 1). Rest of the clinical examination was normal. Imaging was requested by primary surgeon with suspicion of orbital mass.

Brain and orbital magnetic resonance imaging (MRI) showed a well-defined cystic lesion in right intra-conal retrobulbar location, predominantly on the lateral aspect, measuring 64 x 38 x 44 mm (AP x TR x CC). The lesion showed low signals on T1 and high signals on T2 weighted images. No internal T1 bright signals were noted to suggest thrombosis or hemorrhage. No definite internal septations or solid component of this cystic mass was noted. Mass effect was noted upon extra-ocular muscles, stretching and splaying them, predominantly on the lateral and inferior rectus muscles. The lesion was protruding anteriorly with mass effect on right globe, pushing it anteromedially and inferiorly. The lesion was abutting orbital apex causing expansion of the orbital margins. Optic nerve was not distinctly visualised. Intracranial part of the right optic nerve as well as the optic chiasm remained preserved. No restricted diffusion noted. Left orbit and it's contents were unremarkable. On post contrast study, thin peripheral rim enhancement was noted (Figure 2). Chest x-ray was unremarkable without any definite collapse, consolidation, pleural effusion or pneumothorax. Ultrasound abdomen was carried to

look for any primary lesion in abdomen which remained negative. Similarly, CT chest abdomen and pelvis was also carried out to look for any other disease in body, which showed no concerning pathology or presence of any other hydatid cyst in chest, abdomen and pelvis.

Different hematological and biochemical parameters which included a full blood count, liver function tests, renal function tests and viral markers were taken. The TLC was 7440, Plt 312000, Neutrophils 70. Patient's viral markers of hepatitis B and C were negative. The echinococcus IgG serology by ELISA was also performed which showed a value of 0.08 [negative  $\leq 0.8$ , borderline  $\Rightarrow 0.8$  to 1.1 and positive  $= > 1.1$ ]. The histopathological slides show cyst wall with prominent laminations. Innermost germinal layer was focally present. Multiple protoscolices were identified. No malignant tissue was noted.

This was diagnosed as hydatid cyst of orbit. Detailed road map was discussed with surgeon since surgical excision is treatment of choice. Patient was informed



Figure 1: Pre-surgical picture of patient with red eye, proptosis and chemosis.

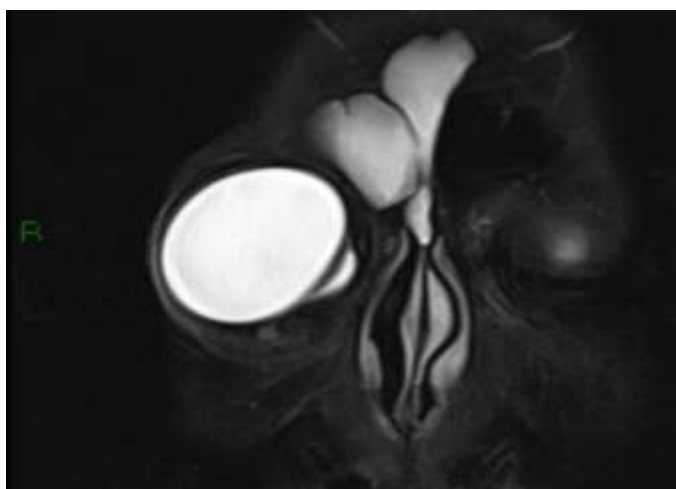


Figure 2 A: Coronal FS WI MRI of orbit: Fluid signal intensity lesion without any suppression on fat sat sequences.

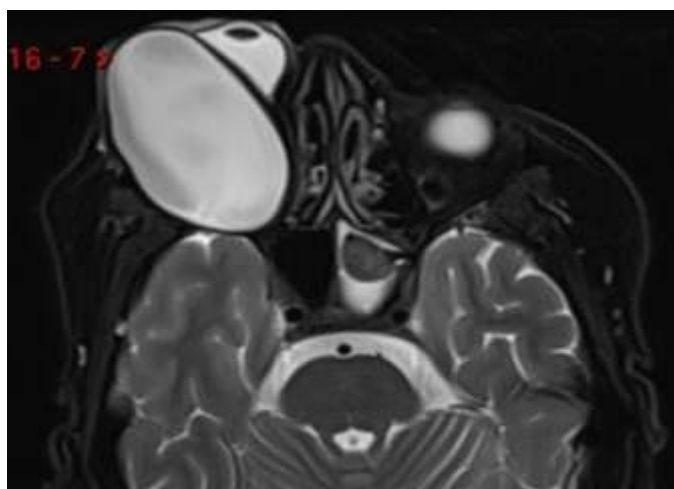


Figure 2 B: axial T2WI of MRI orbit, hyperintense lesion in intraconal compartment of right eye with mass effect upon underlying structures and significant proptosis.

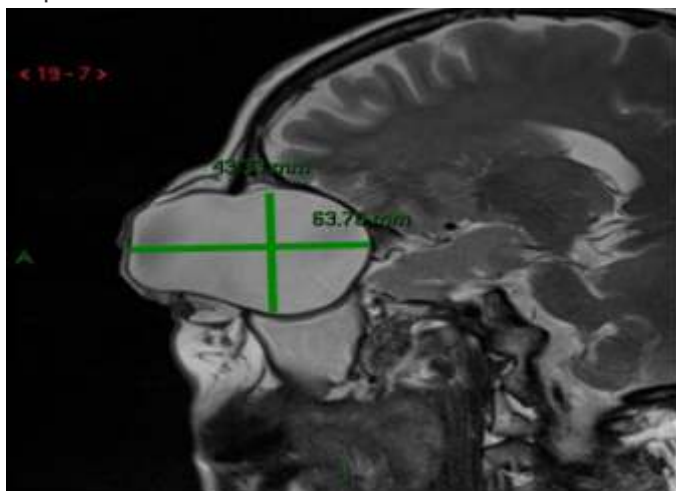


Figure 2 C: Sagittal T2W MRI orbit, 6.3 x 4.3 cm (AP x TR) mass noted in eye.

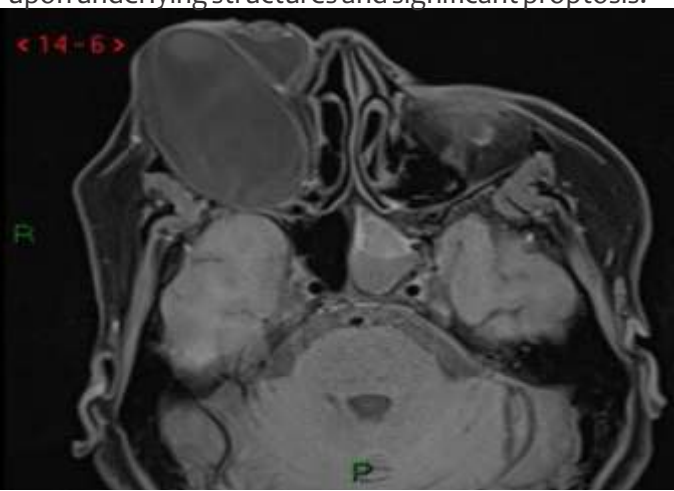


Figure 2 D: Axial FS post contrast image shows peripheral thin rim enhancement.

about surgical complications in details. Informed consent was obtained to publish the case report with anonymity retained. The surgical approach was lateral trans conjunctival orbitotomy (Figure 3).

The patient's post-operative course was uneventful (Figure 4). A whitish and fragile thick walled hydatid cyst was retrieved post surgically (Figure 5). The diagnosis was confirmed on histopathology (Figure 6). No post-op complications were observed. Patient is fine post-surgery, however the visual acuity is reduced in right eye.

## DISCUSSION

The most common location for hydatid cyst is liver (60-70%) and then lungs (20%).<sup>8</sup> Intra-orbital occurrence of hydatid cyst accounts for only 1%.<sup>9</sup> The disease most commonly infects children and young adults.<sup>4,10</sup> Systemic manifestations of orbital hydatid cyst are rare. No predominance for right or left orbit is noted.<sup>2,3</sup>



Figure 3: Surgical approach lateral transconjunctival orbitotomy



Figure 4: Post-surgical image of patient with drain in place.

No specific site predilection is seen, however retrobulbar location, intra or extraconal locations are reported.<sup>10</sup> Intraconal location was also noted in our case.

The clinical presentation is mostly of unilateral proptosis. Loss of vision, chemosis, orbital cellulitis, redness, watery discharge and palpebral oedema are also seen in patients. In endemic regions, painless and slow-growing proptosis should always raise the suspicion of orbital hydatid cyst.<sup>11</sup>

Ultrasound of hydatid cyst is usually performed to see presence of daughter cysts. On CT, most common presentation of hydatid cyst is of unilocular, hypo-attenuating, non-enhancing homogenous cyst with visualization similar to vitreous body. MR imaging will show isointense signals on T1- and T2- weighted images. Peripherhal rim enhancement is seen after contrast administration. CT is helpful in delineating bony details like erosion of orbital cavity walls and also for anatomic localizations of the bony pathologies. MR is superior to



Figure 5: A whitish and fragile thick walled hydatid cyst was retrieved post surgically.



Figure 6: Outermost pericyst is fibrous, middle ectocyst layer is laminated, hyaline and acellular and the inner endocyst germinative layer of protoscolices.



CT scan since there is better evaluation of the cystic content, exact location, extension and soft tissue details.<sup>12</sup>

Exact diagnosis lies in histopathological diagnosis of cyst which comprises of 3 layers: outermost pericyst is fibrous, middle ectocyst layer is laminated, hyaline and acellular and the inner endocyst is the germinative layer. The daughter cysts and brood capsules with scolices are noted in endocyst. Granulomatous palisading reaction and pseudocyst formation can be seen in cutaneous lesions. The differential diagnosis of hydatid cyst on imaging is any other cystic lesions like abscesses, mucocele, intraorbital haematomas, lacrimal tumours or cysts and lymphangiomas.

Hydatid cysts should be removed completely with an adjuvant treatment therapy of Albendazole, specially 14-28 days before surgery.<sup>12</sup> Care should be taken to avoid the risk of rupture, spread of disease or even to reduce the chance of anaphylactic exposure. Main purpose of our case report is to highlight the significance of hydatid disease prevalence in endemic countries. Serological tests maybe non-specific and even negative in many cases, like in our patient. Superior quadrant is most prone to infection, was also seen in our case.

## CONCLUSION

Hydatid cyst is most common in liver, and very rare in orbits (0.32%). Positive serologies can be seen in half of the patients. Our patient was serology negative. After imaging, a pre-diagnosis of hydatid cyst was made. Surgical excision is treatment of choice. Further confirmation on histopathology made diagnosis of hydatid cyst possible. Patient is doing well after surgery.

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