Case Reports in Ophthalmology

Case Rep Ophthalmol 2024;15:163–168
DOI: 10.1159/000536347
Received: October 31, 2023
Accepted: January 10, 2024
Published online: February 23, 2024

Case Report

An Unusual Presentation of Periorbital Cysticercosis Mimicking a Dermoid Cyst

Gunjan Tomar Sandeep Pal Narendra Patidar Himanshu Gaikwad

Department of Orbit and Oculoplasty, Sadguru Netra Chikitsalaya, Chitrakoot, India

Keywords
Cysticercosis · Dermoid cyst · Mass · Orbital cyst

Abstract
Introduction: Cysticercosis is a parasitic infestation caused by *Taenia solium*, which is a pork tape worm. Humans are the definitive host, and pigs are the intermediate host. It is more prevalent in low socioeconomic regions with poor hygiene and among populations where undercooked pork is consumed. ***Case Presentation:*** We hereby report an uncommon site of cyst lodgment and duration of presentation in a 24-year-old male who presented with a firm, non-tender mass over the superomedial aspect of the right orbital rim, superior to the medial canthal tendon for the last 9 years. Chronic presentation and location of the mass led to the tentative diagnosis of a dermoid cyst. Hence, a CECT orbit was advised to assess the extent and attachment of the mass. Unexpectedly, a cystic lesion with hyperdense nidus, suggestive of cysticercosis, was identified. Histopathology of the excised mass confirmed the diagnosis of cysticercosis. ***Conclusion:*** Our case emphasizes the importance of an uncommon site and chronic presentation in cases of cysticercosis.

Introduction

Cysticercosis is caused by cysticercus cellulosae, the larval form of pork tapeworm. The causative organism is *Taenia solium,* and the definitive hosts are human beings who harbor the adult parasite in their intestines. Pigs are intermediate hosts that harbor the larvae in their intestines [1]. The source of infection is generally contaminated food and water infested with eggs. This disease is more prevalent in certain rural areas of the world with poor sanitation and where undercooked pork is consumed. In ocular cysticercosis, extraocular muscles were the major foci of cyst lodgment, followed by the subconjunctival space, vitreous cavity,

Correspondence to:
Narendra Patidar, narendrapatidar59@gmail.com

subretinal space, and orbito-adnexal [2]. Human cysticercosis predominantly affects the central nervous system, causing neurocysticercosis, and also the eye, causing ocular cysticercosis. According to demographic studies, extraocular involvement has been found to be more prevalent in Asian countries and intraocular involvement in Western countries [3]. The mean duration of symptomatology was 2 months and 5 months, as described in the studies conducted by Rath et al. [3] and Chowdhary et al. [4], respectively. This case is being reported because of the unusual location and chronic presentation of cysticercosis, which masqueraded as a dermoid cyst.

Permission from the patient to print identifiable photographs was obtained and archived. The case described in this report is compliant with the Declaration of Helsinki and Health Insurance Portability and Accountability Act regulations. The CARE Checklist has been completed by the authors for this case report, attached as online supplementary material (for all online suppl. material, see https://doi.org/10.1159/000536347).

Case Presentation

A 24-year-old male presented with a complaint of a mass over the superomedial aspect of the right orbital margin, superior to the medial canthal tendon since last 9 years. It was initially small in size (Fig. 1a) and gradually increased since last 1 year (Fig. 1b). BCVA was 6/6 in both eyes. Noncontact tonometry was within normal limit in both eyes. Systemic examination was unremarkable.

On clinical examination, a smooth, firm mass, fixed to the underlying tissue, measuring approximately 11 × 9 mm was present over the superomedial aspect of the right orbital rim. It was non-compressible, non-reducible, not associated with restriction of ocular movement. Posterior limit of the mass was felt, suggesting no intraorbital extension. Remaining ocular examinations were within normal limits.

A provisional diagnosis of the dermoid cyst was made, owing to the location and chronic presentation of the mass. CECT orbit was advised to confirm the diagnosis and define the extent of the mass. To our surprise, CECT revealed a hyperdense nidus approximately 10 × 9 mm in a hypodense cystic lesion over the nasal bridge on the right side extending over the medial orbital rim, suggestive of cysticercosis (Fig. 1c). An excision biopsy was performed, and the mass was removed in toto. H/P revealed a cystic cavity with irregularly shaped membranous infolding along with the scolex of cysticercosis larvae, surrounded by a well-defined cyst wall containing mixed inflammatory cell infiltrate (Fig. 1). On 3-month follow-up, there was no evidence of recurrence.

Discussion

Cysticercosis has been reported worldwide, but most of the reports are from developing countries due to poor sanitation and open defecation. It still remains a significant health problem in India, causing preventable blindness. Ocular cysticercosis occurs when man becomes the intermediate host by ingesting eggs through contaminated water or food. Orbital and adnexal cysticercosis can have a wide spectrum of clinical manifestations.

In 2010, Rath et al. [3] published a case series of 171 cases of orbital cysticercosis out of which 118 were located in the anterior orbit, 42 in the subconjunctival space, and 10 in the posterior orbit. All the orbital cysts (80.7%) were either located in the extraocular muscle or

Case Rep Ophthalmol 2024;15:163–168
DOI: 10.1159/000536347

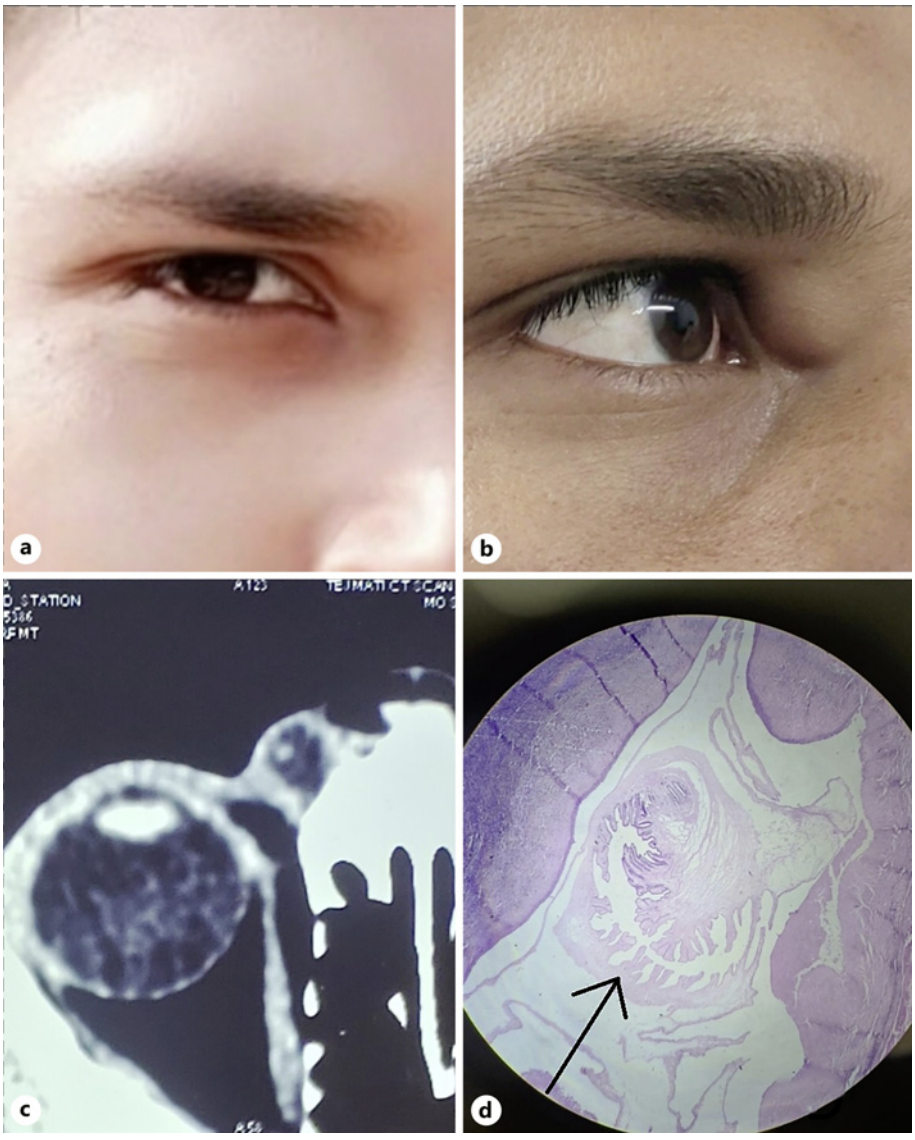

Fig. 1. a Firm mass seen superior to the medial canthal tendon (5 years ago). **b** Increased size of mass at the same location, on presentation. **c** CECT orbit axial section showing a hypodense cystic lesion with eccentric hyperdense nidus. **d** HPE (hematoxylin and eosin stain, ×100) shows scolex of cysticercosis larva (Black arrow) surrounded by a well-defined cyst wall containing inflammatory infiltrate.

were attached to it. The median duration of symptoms was 2 months (range 0–24 months). This was contrary to our case with chronic presentation of over 9 years. This prolonged period of presentation could be explained by release of prostaglandin by the cyst which results in inhibition of the host's immune and proliferative response. It is likely an immune regulatory response by the cyst for long-term survival by overcoming the host's attempt to eradicate them [5].

In a 2007 study conducted by Madigubba et al. [6], the most common location of cysticercosis was subconjunctival in 63% (74/118), intraocular in 26% (31/118), and orbitoadnexal in 11% (13/118). In 2003, in a study conducted by Chaudhary et al. [4] (Table 1), the most commonly involved site was subconjunctival (78%) (14/18) followed by one each in the orbit and vitreous cavity with a mean duration of presentation of 20 weeks (4–104 weeks).

Table 1. Indian reports specifying the clinical findings, investigations, and management

First author, year	Patient, *n*	Age	Location	Duration	Investigation	Management	Final outcome
Shanbagh et al. [7] (2008)	1	24 years	Medial aspect of the upper lid in the preseptal plane	12 months	Ultrasound B-scan, CT scan, and positive ELISA	Surgical excision	NA
Bothra et al. [8] (2019)	1	Teenage	Superior to the medial canthal tendon	1 year	CT scan	Surgical excision	NA
Choudhary et al. [4] (2003)	14	10–30 years	Subconjunctival: 10, intraorbital: 1, intravitreal: 1, optic nerve: 2	NA	NA	Complete surgical excision	NA
Salim et al. [9] (2021)	61	Mean: 24.33±31.04 years	EOM: 90%, orbital cysticercosis: 9.83%	3.65 months	Ultrasound B-scan, CT scan, and MRI	Predominantly managed medically	Complete resolution (45%), partial resolution (47.5%), no resolution (7.5%)
Madigubba et al. [6] (2007)	118	Mean: 17 years	Subconjunctival: 63% Intraocular: 26% Orbito-adnexal: 11%	NA	NA	Surgical excision	NA
Rath et al. [3] (2010)	171	Median age: 13 years	In relation to EOM: 80% Intraocular cysticercosis: 20%	0–24 months	Ultrasound B-scan and CT scan	Predominantly managed medically	Clinical resolution in 95.3% pt. at 3 months

NA: not available.

Case Rep Ophthalmol 2024;15:163–168
DOI: 10.1159/000536347

Shanbhag et al. [7] reported a case of a 24-year-old male with a firm, non-reducible, non-pulsatile swelling over the medial aspect of the right upper lid since last 12 months. He was put on an oral steroid which led to reduction in cyst size but reappeared later on. A USG B-scan and CT scan were performed which showed a cystic lesion in the preseptal space with an eccentric nodule of calcific focus. An excision biopsy was performed and sent for hematoxylin and eosin staining which confirmed the diagnosis of cysticercosis. Bothra et al. [8] reported a non-tender, multiloculated cyst without scolex masquerading as a dermoid cyst which was confirmed on histopathological examination as racemose cysticercosis. Racemose cysticercosis has been described more commonly in association with neurocysticercosis and has been described to have a multiloculated cystic appearance resembling a "bunch of grapes." This was in contrary to our case where it was radiologically confirmed as a cyst with scolex. Salim et al. [9] published a retrospective case analysis of 61 patients with orbital cysticercosis along with review of previous studies that stated myocysticercosis as the most common form of orbital and adnexal cysticercosis. In their study, 91.80% patients had the cyst located completely or partially within the muscle. The mean duration of symptom was from 3 to 9 months in their study.

In our case, the patient presented with a firm, non-tender swelling superior to the medial canthal tendon for past 9 years which mimicked a dermoid, as dermoid cysts within the ocular region are thought to arise from sequestered benign ectodermal tissue, often at suture lines. The most commonly involved suture lines are the zygomatico-frontal suture in 2/3 and the fronto-ethmoidal suture in 1/3 of patients [10]. A probable reason for this unusual location in our case could be explained by the course of the ophthalmic artery, which runs along the medial side of the orbit after giving the lacrimal branches [4]. Therefore, if a possible case of periorbital cysticercosis is encountered, a high degree of clinical suspicion, along with the characteristic features on imaging studies, is required to reach the final diagnosis.

Conclusion

Our case emphasizes the importance of an uncommon site and chronic presentation in cases of cysticercosis. Orbital cysticercosis can masquerade as a dermoid cyst, and therefore, possibility of cysticercosis needs to be kept in mind, especially in an endemic country like India. The diagnosis relies thorough clinical, radiological, and histopathological assessment.

Statement of Ethics

Ethical approval is not required for this case report in accordance with local and national guidelines. Written informed consent was obtained from the patient for publication of the details of their medical case and any accompanying images.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Funding Sources

The author(s) had no funding sources for the research and publication of this article.

Author Contributions

Gunjan Tomar, Sandeep Pal, Narendra Patidar, and Himanshu Gaikwad contributed to data collection, data analysis, manuscript writing, manuscript editing, and manuscript review.

Data Availability Statement

All data generated or analyzed during this study are included in this article and its online supplementary material. Further inquiries can be directed to the corresponding author.

References

1 Das D, Islam S, Bhattacharjee H, Deka A, Yambem D, Tahiliani PS, et al. Parasitic diseases of zoonotic importance in humans of northeast India, with special reference to ocular involvement. Eye Brain. 2014;6:1–8.
2 Pujari A, Bhaskaran K, Modaboyina S, Das D, Saluja G, Samdani A, et al. Cysticercosis in ophthalmology. Surv Ophthalmol. 2022;67(2):544–69.
3 Rath S, Honavar SG, Naik M, Anand R, Agarwal B, Krishnaiah S, et al. Orbital cysticercosis: clinical manifestations, diagnosis, management, and outcome. Ophthalmology. 2010;117(3):600–5, 605.e1.
4 Chowdhary A, Bansal R, Singh K, Singh V. Ocular cysticercosis-a profile. Trop Doct. 2003;33(3):185–8.
5 Garcia HH, Nash TE, Del Brutto OH. Clinical symptoms, diagnosis, and treatment of neurocysticercosis. Lancet Neurol. 2014;13(12):1202–15.
6 Madigubba S, Vishwanath K, Reddy G, Vemuganti GK. Changing trends in ocular cysticercosis over two decades: an analysis of 118 surgically excised cysts. Indian J Med Microbiol. 2007;25(3):214–9.
7 Shanbhag NU, Karandikar S, Deshmukkh P. Cysticercosis mimicking as dermoid. Bombay Hosp J. 2008;50(4).
8 Bothra N, Mittal R, Pradhan A, Tripathy D. Ocular adnexal racemose cysticercosis masquerading as dermoid cyst. Ophthal Plast Reconstr Surg. 2019;35(6):e160.
9 Salim S, Alam MS, Backiavathy V, Raichura ND, Mukherjee B. Orbital cysticercosis: clinical features and management outcomes. Orbit. 2021;40(5):400–6.
10 Scofield-Kaplan SM, Sobti D, Evers BM, Hogan RN, Mancini R. Unusual location for a periorbital dermoid cyst. Ophthalmic Plast Reconstr Surg. 2018;34(6):e208–9.