

Periorbital dirofilariasis—Clinical and imaging findings: Live worm on ultrasound

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Ocular dirofilariasis is a zoonotic filariasis caused by nematode worm, *Dirofilaria*. We present a case of dirofilariasis affecting the upper eyelid in a 2-year-old child presenting as an acutely inflamed cyst, from southern Indian state of Kerala. Live adult worm was surgically removed and confirmed to be *Dirofilaria repens*. Live worm showing continuous movement was seen on the pre-operative high-resolution ultrasound. Ultrasound can be helpful in pre-operative identification of live worm. Imaging findings reported in literature are very few. We describe the clinical, ultrasound, and magnetic resonance imaging (MRI) findings.

Key words: Magnetic resonance imaging, ocular dirofilariasis, ultrasound

Ocular dirofilariasis is a zoonotic filariasis caused by nematode worm, *Dirofilaria*, transmitted to humans by the bite of *Aedes*, *Culex*, or *Anopheles* mosquitoes. Eye involvement may be periorbital, sub-conjunctival, sub-tenon, or intraocular. The species *Dirofilaria repens* is endemic in southern-middle Europe and in some parts of Asia and Africa.^[1] There are very few reports of imaging findings in literature. We describe the clinical, ultrasound, and Magnetic resonance imaging (MRI) features.

Case Report

A 2-year-old female child presented with acute onset of periorbital edema in right eye. She was initially diagnosed as preseptal cellulitis and treated with systemic antibiotics. There was mild resolution of edema, but a cystic swelling was apparent in the right upper eyelid.

Ultrasound was performed with high-resolution probe (8MHz) and showed a well-defined cyst approximately 2.5×1.5 cm in the lateral part of right upper eyelid. The cyst showed

within it a coiled structure with parallel echogenic walls [Fig. 1]. It showed continuous movement which represents the live worm. MRI was done to know any deep intraorbital extension and exclude other intraorbital abnormalities. MRI of orbits showed a cyst in the lateral part of upper eyelid which showed hyperintense signal on coronal short-tau inversion recovery image [Fig. 2a], hypointense signal on coronal T1 image [Fig. 2b] and revealed rim enhancement on post-contrast T1-weighted fat saturated images [Fig. 2c (coronal) and d (sagittal)]. The cyst was confined to the upper lid. Ill-defined intermediate signal intensity was seen on STIR images [Fig. 2a] within the cyst which may represent the worm.

Surgical excision of the parasitic cyst was done through an upper lid crease incision. The cyst was adherent to the levator palpebrae superioris muscle. It contained a live motile worm measuring about 9 cm in length [Fig. 3]. Histopathological examination [Fig. 4] showed a worm with thick cuticle, muscle coat, longitudinal and transverse striations and double uterus. Based on histopathological appearance, the worm was identified as *D. repens*.

Post-operatively, the child was asymptomatic except for a mild residual ptosis which was improving.

Discussion

Ocular dirofilariasis is a zoonotic filariasis caused by nematode worm, *Dirofilaria*. It is transmitted to humans by the bite of *Aedes*, *Culex*, or *Anopheles* mosquitoes. Dogs are main source of infection and humans are accidental hosts.

Human infection is caused by *Dirofilaria immitis*, *Dirofilaria tenuis*, *Dirofilaria ursi*, and *D. repens*. The condition associated with *D. repens* is the most frequent and the most widely distributed in the world, of the dirofilariases of medical relevance.^[1] The species *D. repens* is endemic in southern-middle Europe and in some parts of Asia and Africa.^[1] In India, dirofilariasis is predominantly reported in published literature in southern India with reports from Kerala,^[2] Karnataka,^[3] and Tamil Nadu.^[4] Cases of Dirofilariasis have also been reported from Assam,^[5] Northern India,^[6] and Western India.^[7]

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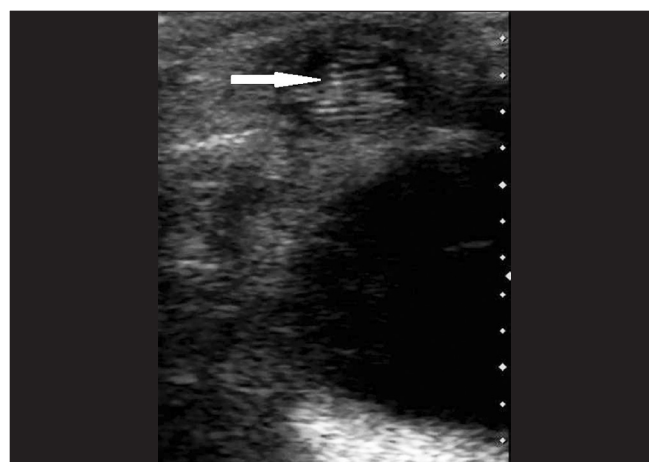


Figure 1: Axial high resolution ultrasound (8MHz) images showing a cystic lesion in the upper lid. A coiled structure with parallel echogenic wall is seen within it (white arrow), which represents the worm

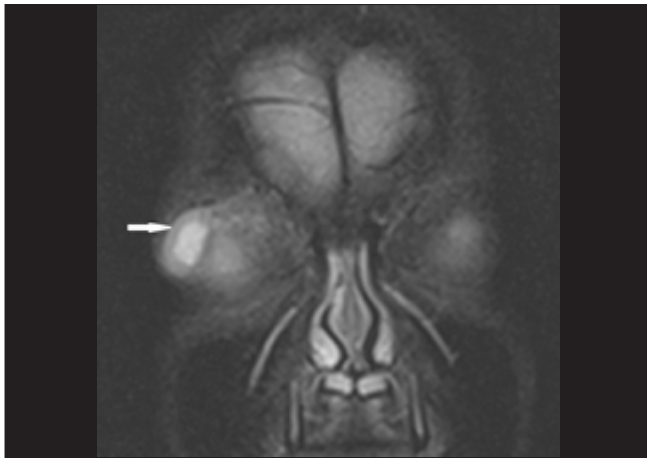


Figure 2a: Coronal short-tau inversion recovery magnetic resonance imaging (MRI) of orbits shows lesion in lateral part of right upper lid with hyperintense signal (white arrow)

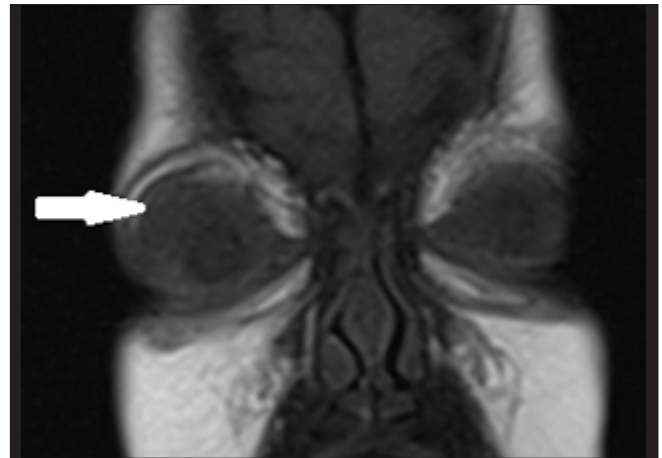


Figure 2b: Coronal T1-weighted image of orbit shows the lesion (white arrow) with hypointense signal



Figure 2c: Post-contrast fat saturation T1 coronal shows rim enhancing lesion (white arrow) in right upper orbit

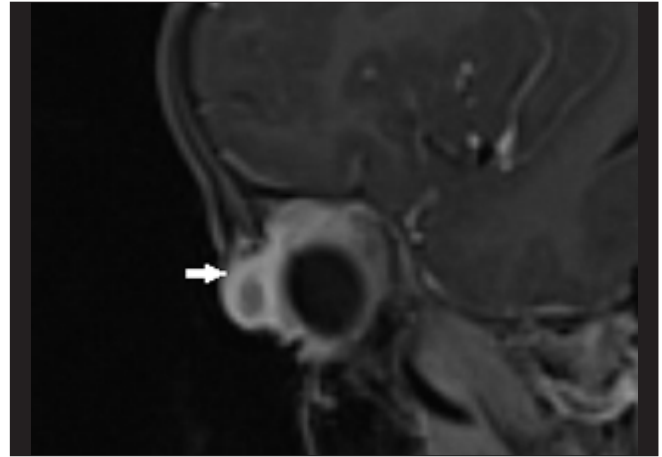


Figure 2d: Post-contrast fat saturation T1 sagittal image shows rim enhancing lesion (solid arrow) in right upper orbit

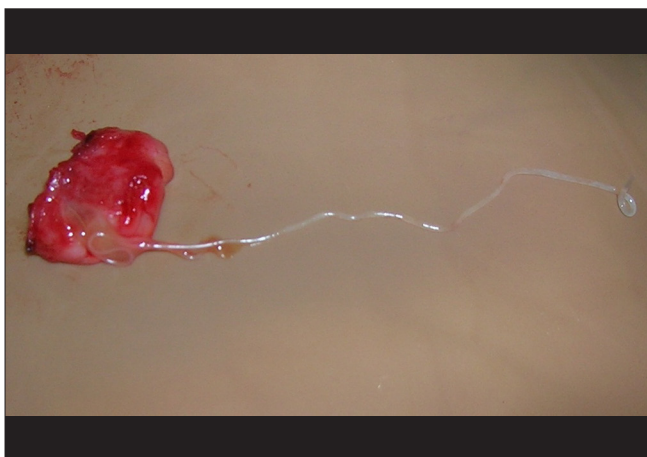


Figure 3: Photograph showing the long worm and the excised inflamed cyst



Figure 4: Histopathological photograph (longitudinal section) of worm showing thick cuticle and transverse striations

Clinically, ocular involvement may be periorbital,^[8] sub-conjunctival,^[6,9] sub-tenon,^[4] and intraocular.^[10] Apart from ocular involvement, subcutaneous^[11] and pulmonary manifestations^[12] can also occur.

Imaging findings have not been well described in literature. Few reports have described the imaging findings.^[13,14] In one report, the live worm was shown on ultrasonography as an actively motile, folded tubular structure with parallel echogenic

walls.^[13] A soft tissue with enhancing periphery was seen on the contrast computed tomography.^[13]

MRI findings have been described in a single case^[14] and include the visualization of an enhancing thick-walled, semiliquid structure with a discrete, tubular, central signal, representing the worm on T1-weighted images.

In our case, high-resolution ultrasound (8MHz) showed a well-defined cyst in upper eye lid with a coiled structure showing parallel echogenic walls. It showed continuous movement. MRI was also done in our case to look for any deep extension and assess other intraorbital structures. MRI showed a well-defined cyst in lateral part of upper eyelid. Rim enhancement was seen on post-contrast T1-weighted fat saturated images, which represents surrounding inflamed tissue. The cyst was within upper eye lid and rest of the orbit was normal. Ill-defined intermediate signal intensities were seen on STIR images which may represent the worm. The definitive visualization of worm was, however, done on ultrasound. MRI mainly showed the inflamed cyst. It excluded deep extension and other conditions such as inflammatory pseudo tumor and lacrimal gland tumor.

Conclusion

This is a report of a case of periorbital type of ocular dirofilariasis. Ultrasound can be used as a non-invasive diagnostic tool to identify live adult worm and may help in pre-operative diagnosis.

References

1. Pampiglione S, Canestri Trotti G, Rivasi F. Human dirofilariasis due to *Dirofilaria (Nochtiella) repens*: A review of world literature. *Parassitologia* 1995;37:149-93.
2. Sekhar HS, Srinivasa H, Batru RR, Mathai E, Shariff S, Macaden RS. Human ocular dirofilariasis in Kerala Southern India. *Indian J Pathol Microbiol* 2000;43:77-9.
3. Nadgir S, Tallur SS, Mangoli V, Halesh LH, Krishna BV. Subconjunctival dirofilariasis in India. *Southeast Asian J Trop Med Public Health* 2001;32:244-6.
4. Sathyan P, Manikandan P, Bhaskar M, Padma S, Singh G, Appalaraju B. Subtenons infection by *Dirofilaria repens*. *Indian J Med Microbiol* 2006;24:61-2.
5. Nath R, Gogoi R, Bordoloi N, Gogoi T. Ocular dirofilariasis. *Indian J Pathol Microbiol* 2010;53:157-9.
6. Gautam V, Rustagi IM, Singh S, Arora DR. Subconjunctival infection with *Dirofilaria repens*. *Jpn J Infect Dis* 2002;55:47-8.
7. Badhe BP, Sane SY. Human pulmonary dirofilariasis in India: A case report. *J Trop Med Hyg* 1989;92:425-6.
8. Jariya P, Sucharit S. *Dirofilaria repens* from the eyelid of a woman in Thailand. *Am J Trop Med Hyg* 1983;32:1456-7.
9. Mittal M, Sathish KR, Bhatia PG, Chidamber BS. Ocular dirofilariasis in Dubai, UAE. *Indian J Ophthalmol* 2008;56:325-6.
10. Beaver PC. Intraocular filariasis: A brief review. *Am J Trop Med Hyg* 1989;40:40-5.
11. Logar J, Novsak V, Rakovec S, Stanisa O. Subcutaneous infection caused by *Dirofilaria repens* imported to Slovenia. *J Infect* 2001;42:72-4.
12. Hirano H, Kizaki T, Sashikata T, Matsumura T. Pulmonary dirofilariasis – Clinicopathological study. *Kobe J Med Sci* 2002;48:79-86.
13. Smitha M, Rajendran VR, Devarajan E, Anitha PM. Case report: Orbital dirofilariasis. *Indian J Radiol Imaging* 2008;18:60-2.
14. Groell R, Ranner G, Uggowitz MM, Braun H. Orbital dirofilariasis: MR findings. *AJNR Am J Neuroradiol* 1999;20:285-6.

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