

## Commentary: Seeing a worm in the eye - Is it enough?

In this issue of Indian Journal of Ophthalmology, authors reported a case of *Dirofilaria repens* removed from the vitreous cavity of a 53-year-old male from Kerala by digitally assisted vitreoretinal surgery.<sup>[1]</sup> Intraocular parasite is rare particularly live worm in the vitreous cavity. We have reported a case of live *Gnathostoma spinigerum* from the vitreous cavity several years before. The worm was motile on the surface of the retina and was removed by pars plana vitrectomy.<sup>[2]</sup> For the interest of the readers, I have enclosed the video of this parasite seen on the

surface of the retina. (Video clip displaying a motile worm on the surface of the retina).

The *Dirofilaria* is not a very uncommon parasite, particularly in Kerala. It has been found that the dogs in Kerala are commonly infested with such parasite. There are several cases of subconjunctival *Dirofilaria* as well as anterior chamber *Dirofilaria* reported from this part of the country. However, live *Dirofilaria* in the vitreous cavity is indeed rare.

When I looked into literature writing an article of another worm in the vitreous cavity called *Gnathostoma*, I found this intraocular parasite has been reported as early as in 1937<sup>[3]</sup> and from India first report of intraocular *gnathostomiasis* came from Sen

*et al.*<sup>[4]</sup> early as in 1945. I was surprised to find that at least 74 cases of intraocular *gnathostomiasis* have been reported in the literature.<sup>[5]</sup> There are quite a large number case of reports of parasites in the eye. There is even a book of ocular parasitology itself.<sup>[6]</sup>

Intraocular parasite when seen by an ophthalmologist most of them get excited and try to report the case. However, it is important to remove it in toto and identify the parasite scientifically. It should be ideally done by a veterinary parasitologist or a medical parasitologist wherever is available. The parasite can be sent to the parasitologist in normal saline or distilled water. Exact identification of the parasite is not easy and one needs to look at the head and tail end and the wall of the parasite as well as internal structures. Recently, polymerase chain reaction has been found to be beneficial in exact identification of the species of the parasite from the extracted DNA of the parasite.<sup>[7]</sup>

These parasites probably enter the eye through the ciliary circulation or through the optic nerve head. Humans get an infection by eating raw meat, raw uncooked fish, or from contaminated water. *Dirofilaria* can enter through mosquito bites also.

When one sees parasite inside the eye, it is important to remove the parasite as early as possible and in toto. The parasites can migrate to various parts of the eye and cause of structural damage to the eye particularly the retina. We have seen retinal hemorrhage and retinal tracts caused by such parasite.<sup>[8]</sup> If not removed they can cause intense inflammation of the eye leading to panophthalmitis. I have seen in pathology specimen of a case of intraocular cysticercus causing intense inflammation with infiltration of polymorphonuclear leukocytes. However, removal of the worm is not easy. Subretinal worm is often difficult to remove and one can localize the subretinal worm with argon laser photocoagulation and can destroy the worm. However, the long-term follow-up of such cases has not been reported.

It is important not only to see the parasite but to document methodically by fundus photography and intraoperative videography. After removal, the worm should be put in wet mount preparation. The removed parasite needs to be measured. One can take a video of the removed parasite under the microscope. Various parts, e.g. head end, tail end, and wall internal structures to be studied in detail to identify the parasite. Histopathological examination of this parasite is often difficult and to identify is more challenging than seeing intact parasite under the microscope. Scanning electron microscope of the parasite can demonstrate elegantly the surface structure of the parasite and can help for further identification. I have reported scanning electron microscopy of a case of *Gnathostoma spinigerum*.<sup>[2]</sup>

The initial symptoms of the intraocular parasite are often peculiar and characteristic. The patient often experience floaters or something moving inside the eye. If a patient comes with such symptoms one should look into the eye carefully and identify it as early as possible. We have seen a *gnathostoma* worm moving into the optic nerve head and underneath the iris and are often not visible by routine ophthalmic examination. We have published a case of intraocular *gnathostoma spinigerum*, localized by ultrasound biomicroscopy.<sup>[8]</sup>

In summary, seeing a parasite in the eye is exciting. However, it is not enough. We should document, identify, and remove in toto.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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