

Intraocular gnathostomiasis: A rare case report from Central India

Preeti Rawat, Manushree Gautam, Nikhila C Jain, Rajdeep Jain

We report the first case of intraocular gnathostomiasis from Central India. A 29-year-old male from Indore, Madhya Pradesh, presented with pain and redness of the right eye since 1 month. Slit lamp examination revealed anterior uveitis, multiple iris atrophic patches, and a live worm hooked on iris. The worm was removed through a small sclerocorneal tunnel. Microscopy confirmed *Gnathostoma spinigerum*. The patient was treated with oral albendazole and steroids. The case is reported because of its rarity.

Key words: Ocular gnathostomiasis, sclerocorneal tunnel, uveitis

Intraocular gnathostomiasis is a rare parasitic infection caused by the third-stage larvae of spiruroid nematode *Gnathostoma* species seen mostly in tropical and subtropical regions. It is a food-borne zoonosis caused by ingestion of raw or undercooked freshwater fish, amphibians, reptiles, birds, and mammals, all of which are known to harbor advanced third-stage larvae of *Gnathostoma* species.^[1] *Gnathostoma spinigerum* is the most common *Gnathostoma* species in Asia associated with a unique unilateral form of ocular larva migrans where an actively motile parasite can be seen more often in the anterior and less frequently in the posterior segment of the eye.^[2] In India, most cases have been reported from eastern^[3] and northeastern states,^[4] 2 cases from southern coastal states,^[1,5] and one case from western coastal states.^[6] We report the first case of ocular gnathostomiasis in Central India.

Case Report

A 29-year-old male, driver by occupation, came with complaints of redness, pain, and diminution of vision in the right eye from 1 month. The patient had a mixed diet including fish and poultry. On general examination, there was no edema, pallor, organomegaly, or lymphadenopathy. There was no history of migratory skin eruptions.

On examination, the visual acuity in the right eye was 6/9, and the visual acuity in the left eye was 6/6. On slit lamp

examination, the left eye was normal. The right eye showed mild ciliary congestion and pigments on the endothelium and anterior lens capsule. The anterior chamber had 2+ cells and flare. The iris had multiple atrophic patches, 2 iris holes were present, and the pupil reacted normally. There was a live, motile worm hooked to the midperipheral iris [Fig. 1]. The fundus was normal. All routine investigations including hemogram and chest X-ray were normal. Routine urine and stool examination did not reveal any egg/worm/larva. Magnetic resonance imaging of the brain and orbit and ultrasonography B-scan of both eyes were normal.

Under peribulbar anesthesia, a 3 mm sclerocorneal tunnel was made. The worm was extracted with plain forceps from the anterior chamber and was sent for microscopy to the Department of Microbiology and Parasitology. The worm was a short and stout reddish brown, cylindrical structure measuring approximately 1 cm in length. On the examination of wet mount, it showed bulbous head with four rows of hooklets; the anterior part of the worm is covered with rows of cuticular spines. Diagnosis of *G. spinigerum* was confirmed by microscopy [Figs. 2-5]. The patient was given oral albendazole 400 mg once daily for 21 days and tapering dose of oral prednisolone (50 mg od for a week followed by tapering dose by 10 mg every week, 5 mg od for a week after the 5th week, and then stopped). Patient was followed up every month for 3 months. Patient recovered with no sequelae [Fig. 6].

Discussion

Of the 12 known species within the genus *Gnathostoma*, only 4 species have been known to infect humans namely *Gnathostoma nipponicum*, *Gnathostoma hispidum*, *Gnathostoma doloresi*, and *G. spinigerum*. *G. spinigerum* is found in wild and domestic cats and dogs in Southeast Asia, China, Japan, and India.^[2] Humans become accidental host when they consume raw or undercooked meat of the definitive host or the second intermediate hosts such as brackish water fish, chicken, snails, and frogs or paratenic hosts such as birds.^[7] Cutaneous lesions such as migratory panniculitis or serpiginous eruptions caused by the migration of the third-stage larvae are the most common manifestation of this infection, but their onset may be delayed for months and even years.^[8] Migration to unexpected sites leads to visceral involvement of the lungs, gastrointestinal tract, genitourinary tract, ear, central nervous system, and eye. Among the various forms of visceral gnathostomiasis, central nervous system infestation causes fatal eosinophilic myeloencephalitis whereas ocular involvement is rare.^[9,10] The most common manifestation of intraocular gnathostomiasis is anterior uveitis and intraocular parasite because it mostly localizes itself in the anterior segment of the eye. The other

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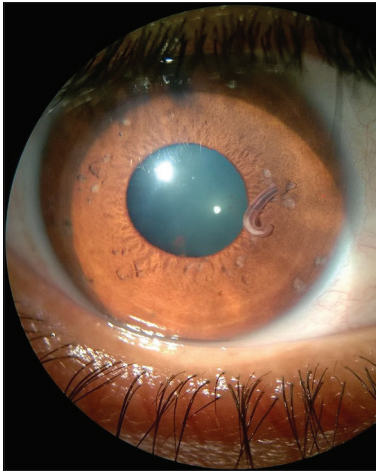


Figure 1: Depicting live worm hooked to midperipheral iris

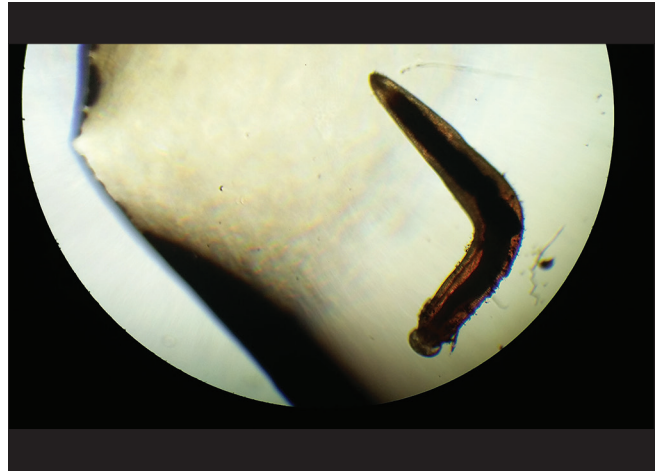


Figure 2: Third-stage larva of *Gnathostoma spinigerum*



Figure 3: Cephalic bulb of *Gnathostoma* larva with rows of hooklets



Figure 4: Body cavity of *Gnathostoma spinigerum*

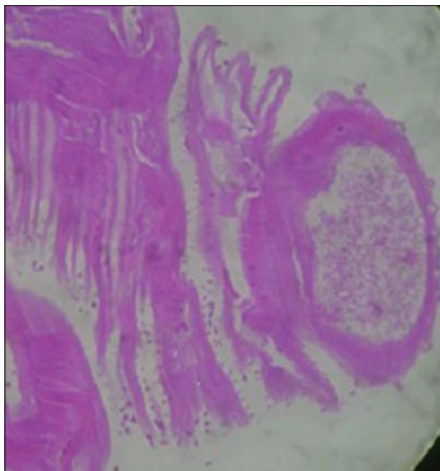


Figure 5: H and E stained section

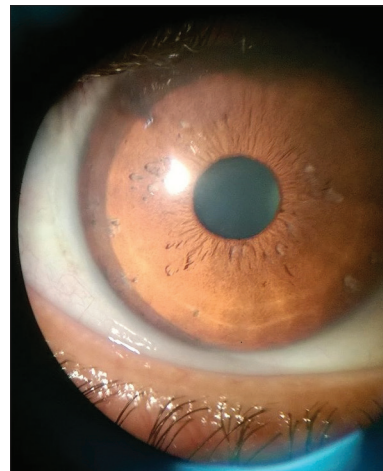


Figure 6: Eye of the patient after removal of the gnathostostoma larva

common manifestations are eyelid edema, conjunctival chemosis, hyphema, retinochoroidal, vitreous hemorrhage, and rarely, central retinal artery occlusion leading to blindness. The portal of entry into the eye may be posterior retina because

intraocular gnathostomiasis has been associated with macular scarring, rupture of nasal branch of central retinal artery, or retinal tear with choroidal hemorrhage near the optic disc.^[1] Iris holes, uveitis, and subretinal hemorrhage with

Table 1: List of intraocular gnathostomiasis cases in India^[1,3-5,10]

Year	Author	Location	Number of cases	Site	Gender	Eosinophilia
1945	Sen and Ghose	Calcutta	1	AC	Male	Absent
1969	Seal <i>et al.</i>	Calcutta	2	AC	1 female + 1 male	Present
1994	Biswas <i>et al.</i>	Chennai	2	1 AC + 1 VC	2 male	Not mentioned
1999	Kannan <i>et al.</i>	Chennai	1	AC	Female	Not mentioned
1999	Rao <i>et al.</i>	Pondicherry	1	AC	Female	Not mentioned
2004	Basak <i>et al.</i>	West Bengal	1	VC	Male	Absent
2007	Bhattacharjee <i>et al.</i>	Assam	1	VC	Female	Present
2007	Barua <i>et al.</i>	Meghalaya	1	AC	Female	Absent
2009	Tiwari <i>et al.</i>	Odisha	1	AC	Female	Present
2013	Sujata and Renu	Pune	1	AC	Male	Absent
2013	Sarkar <i>et al.</i>	West Bengal	1	AC	Male	Not mentioned
2012	Pillai <i>et al.</i>	Kerala	1	AC	Male	Absent
2015	Present case in Indore		1	AC	Male	Absent

VC: Vitreous cavity, AC: Anterior chamber

subretinal tract can be characteristic features of intraocular gnathostomiasis.^[5]

Clinical symptoms of gnathostomiasis are due to the inflammatory reaction provoked by migrating larvae. Clinically, it may present as painful cutaneous larva migrans, gastrointestinal, genitourinary, and central nervous system infections, with or without peripheral blood eosinophilia (eosinophil count $>0.4 \times 10^9/L$), or undiagnosed eosinophilia with nonspecific symptoms.^[11] Because of the avascularity of the anterior chamber of the eye, eosinophilia which is the hallmark of parasitic infections is evidently absent and usually mild if at all present.^[8] Once the disease is diagnosed, management of gnathostomiasis is straightforward. Hence, eosinophilia cannot be considered a screening tool. However, Moore *et al.* have commented that it could be used as a marker of treatment response in those with eosinophilia at baseline.^[12] In the present case, there was no cutaneous manifestation and no eosinophilia.

High-dose albendazole, given for 3 weeks, has been used as specific chemotherapy for treatment of patients with gnathostomiasis. Till now, 14^[1,6] intraocular gnathostomiasis cases have been documented from India – 3 from Calcutta, 2 from West Bengal, 3 from Chennai, one each from Meghalaya, Assam, Odisha, Kerala, Pondicherry, and Maharashtra [Table 1]. With increasing reports of intraocular gnathostomiasis from India, the clinicians should be familiar with this disease; therefore, diagnosis is not missed or delayed, avoiding potentially serious complications.

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Conflicts of interest

There are no conflicts of interest.

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