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Management of intraocular cysticercosis

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Abstract ● **Background:** A study was carried out to investigate the various posterior segment presentations of intraocular cysticercosis and their management. ● **Methods:** A retrospective study of five consecutive cases of intraocular cysticercosis seen at our institute was done. Pars plana vitreous surgery for removal of intact cysts was done in all cases. ● **Results:** Complete removal of the intact cyst through the pars plana route was achieved in all cases.

Postoperative periods were uneventful, with visual recovery to 6/9 or better in all cases.

● **Conclusions:** Complete surgical removal of the intact cyst can result in good functional recovery in eyes with intraocular cysticercosis.

Introduction

Cysticercosis is the infestation of humans by *Cysticercus cellulosa*. Ocular involvement occurs in 13–46% of infected patients [5, 9]. Most reports of intraocular cases in the last 20 years have been in Latin Americans [1, 10]. Adnexal cases were more common in India [12]. Infestation is more common in young adults, preferentially in the first four decades [5], with no sex predilection noted. Humans acts as intermediate hosts by eating fecally contaminated food or by internal auto-infection. Access of the parasites to the posterior segment is probably through the posterior ciliary arteries, and they have been found near the posterior pole in the subretinal space [2]. They usually pass through a break in the retina into the vitreous. A rhegmatogenous retinal detachment may develop [4], or the perforation may be sealed by an inflammatory reaction with a chorioretinal scar [8]. Treatment of ocular cysticercus is surgical [13]. A complete pars plana vitrectomy with aspiration of the cyst is the recommended approach for removal of intravitreal cysticercus [6, 11]. Cysticerci which are not surgically removed increase in size and begin to release toxins, leading to a profound in-

flammatory reaction and eventual destruction of the eye [2].

Materials and methods

A retrospective analysis of five consecutive patients with intraocular cysticercosis was carried out. The youngest patient was 22 years old and the eldest 38 years. Four of the patients studied were males, the other female. All patients complained of defective vision of recent onset in the affected eye. The mean duration of complaints was 2 months. All patients had a Snellen visual acuity check, intraocular pressure examinations with Schiottz tonometer, anterior segment examination with slit-lamp biomicroscopy, and posterior segment examination with binocular indirect ophthalmoscopy. The cyst was seen subretinally in one case, an intravitreal cyst with localised retinal detachment not involving the macula was seen in two cases, and an intravitreal cyst with evidence of transretinal migration in the form of a chorioretinal scar was seen in the fourth case (Figs. 1, 2). The fifth case presented a picture similar to endophthalmitis, with anterior chamber inflammation and vitreous reaction precluding view of the retina. The macula was not involved in any of the cases. All patients were advised to undergo surgical removal of the cyst under local anaesthesia. Surgical procedures adopted include vitrectomy and cyst removal in all eyes. Three-port vitrectomy was performed via the pars plana route with sclerotomies placed 3.5 mm from the limbus. A wide-angle observation system, the binocular indirect ophthalmomicroscope, was used in all cases. Adhesions

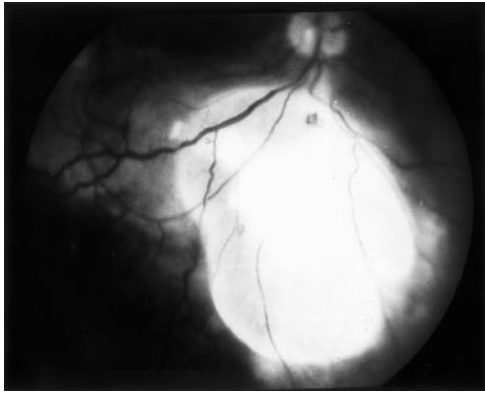


Fig. 1 Subretinal cysticercosis

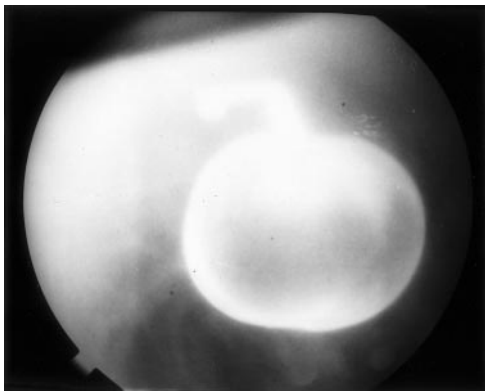


Fig. 2 Intravitreal cysticercosis



Fig. 3 Removal of a cyst from the vitreous cavity by three-port pars plana vitrectomy

around the cyst were carefully released using the ocutome and retinal brush. The cyst was removed from the eye using either the ocutome itself in suction mode only or a sleeved endocytroprobe through the sclerotomy opening, taking care not to rupture the cyst wall (Fig. 3). The cyst was gently extracted through the sclerotomy opening. The cysts varied in size from 4.5 mm to 12.5 mm. Care was taken to ensure that the sclerotomy opening was clear in all cases. Ad-

Table 1 Visual status

Preoperative	Postoperative
6/12	6/6
6/18	6/9
6/9	6/6
6/12	6/6
6/60	6/9

ditional procedures adopted include retinotomy and endolaser in the eye with subretinal cysticercosis, repair of the retinal detachment with scleral buckling plus encirclage and endolaser in the two eyes with detached retina, and endolaser in the eye with transretinal migration of the cyst.

All patients were put on tapering topical betamethasone sodium phosphate 0.1%, topical ciprofloxacin 0.3% and topical atropine 1% postoperatively for a period of 6 weeks. All patients were followed up for a minimum period of 6 months.

All patients were reviewed on day 1, day 3, day 15, and day 45. All patients were followed up for a minimum period of 6 months. Visual acuity examination using a Snellen chart and fundus examination with the binocular indirect ophthalmoscope under full mydriasis were carried out on all follow-up visits.

Results

Vitrectomy with surgical removal of the cyst was done in all cases via the pars plana route. The cyst was removed intact in all cases, with no intraocular rupture of the cyst wall. An intravitreal cyst with attached retina was seen in the eye with an endophthalmitis-like presentation on three-port pars plana vitrectomy. The postoperative course of all patients was uneventful. Patients were put on topical steroids, antibiotics and mydriatics postoperatively for 6 weeks. Postoperatively, all patients were examined using the slit lamp and the binocular indirect ophthalmoscope. No anterior or posterior segment inflammation was observed. Complete removal of the cyst was achieved in all cases. Visual acuity was examined using a Snellen chart. All patients had good functional recovery (Table 1). Six months postoperatively, the retina was attached in all eyes.

Discussion

Human infestation by the larval form of *Taenia solium*, *Cysticercosis cellulosae*, occurs due to the consumption of fecally contaminated food or by internal autoinfection. Most of the reports from India are of adnexal involvement, with intraocular involvement more common in Latin Americans. In the posterior segment cysticerci have been reported intravitreally as well as subretinally. While the cyst may be well tolerated while alive, a dead cyst gives rise to a severe inflammatory reaction in response to the toxins released and may result in a painful blind eye. Treatment of ocular cysticercosis is always surgical,

and different approaches to posterior segment cysticercosis, including diathermy, photocoagulation, cryocoagulation and lens extraction with pars plana vitrectomy [6], have been advocated. A complete pars plana vitrectomy with careful removal and aspiration of the cyst is currently the recommended approach. We performed a complete three-port pars plana vitrectomy in all eyes with complete removal of an intact cyst. Subretinal cysticercosis may be removed by a direct sclerostomy over the cyst after precise localisation [14] or through the pars plana approach after a retinotomy, especially if the cyst was posterior. A superotemporal retinotomy was made in one eye for re-

moval of the subretinal cyst. Careful release of all surrounding adhesions is necessary to facilitate complete removal of the cyst. We achieved the same using the ocutome. After complete release of the adhesions, the cyst was removed using either the ocutome or the retinal brush. Postoperative topical steroids and mydriatics are all that are required to control inflammation [3]. Effective medical management of intraocular cysticercosis is yet to be achieved, probably because of inadequate intraocular penetration of the drugs [7]. In our series all patients had good functional recovery of the eye after careful complete surgical removal of the cyst.

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