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OCULAR TOXOCARIASIS IN RESIDENTS OF THE SAME HOUSEHOLD

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ABSTRACT

Toxocariasis is an important neglected tropical disease that can manifest as visceral or ocular larva migrans, or occult toxocariasis. All three forms represent a public health problem and cause significant morbidity in high-prevalence areas. Despite being one of the most common zoonotic infections worldwide, human toxocariasis has been one of the most neglected tropical diseases. Although most human infections are asymptomatic, two main syndromes of human toxocariasis are classically recognized: systemic toxocariasis (ST) and ocular toxocariasis (OT), caused by migration of Toxocara larvae to the eye. OT is usually a unilateral disease that usually presents as a retinal granuloma and is characterized by a yellowish or whitish inflammatory mass in the posterior pole or periphery of the retina. The granuloma itself or other associated conditions such as epiretinal membrane, macular edema, and retinal detachment can cause permanent damage to the retina with a consequent decrease in visual acuity. OT is clinically diagnosed by identifying clinical signs in the eye exam. Serological tests such as enzyme-linked immunosorbent assay (ELISA) to detect serum antibodies against Toxocara larvae can confirm the diagnosis. Combined corticosteroid and albendazole therapy in patients with active inflammation has been shown to be favorable. Prevention, increasing public awareness and reducing the risk of infection is critical.

KEYWORDS: Ocular toxocariasis; Toxocara kennels; Fibrotic beams; Maculopathy; Treatment; Eye infection.

INTRODUCTION

Toxocariasis is a disease caused by the nematodes Toxocara canis and Toxocara catis, specific parasites that infect the intestines of dogs and cats, respectively. When the eggs of the parasites reach the human intestine, the larvae are released and migrate via the blood and lymph streams, affecting the liver, lungs, eyes and other organs.[1-4]

Infection in children occurs by ingestion of T. canis eggs by direct contamination of the hands, by direct contact with puppies, especially those aged between 2 weeks and 6 months, and indirectly, by contact with objects contaminated with infected eggs, as well as as by ingestion of soil, containing infected larvae or eggs.[1.3-6]

The disease is unilateral in most cases, with mild to moderate or diffuse inflammation. The clinical presentation varies from granuloma in the retinal periphery, in the macula, endophthalmitis, to the presence of fibrotic beams that commonly go from the optic disc towards the macula or the retinal periphery.[2,4,6,7] Granulomas can also be found on the optic disc. The most common clinical signs and the main causes of vision loss are vitreous inflammation, cystoid macular edema and traction of vitreoretinal filaments towards the optic nerve and/or a granuloma.[2,5,6,8,9]

The definitive diagnosis is made by demonstrating the larva or fragment of its capsule at the lesion site, and this procedure is rarely performed. Thus, the diagnosis of the disease is based on clinical-epidemiological data, immunological tests, laboratory and imaging tests. Among the complementary exams for the diagnosis of ocular toxocariasis, immunological tests such as ELISA (enzymatic immunological technique used to determine the level of Toxocara canis antibodies present in serum), blood count, radiography, computed tomography, ocular

electrophysiology and ocular ultrasound may be useful. the latter is especially important in the differential diagnosis with retinoblastoma, in which calcium deposits are found. Eosinophilia is usually absent in ocular toxocariasis.[2-5,8-11]

Although most patients with toxocariasis have a benign course, the larva can remain alive in the human body for 2 years or more. Visceral Larva migrans (VLM) compromises many systems, and clinical factors including leukemoid reaction and hypereosinophilia can mimic many diseases.[6,10-12] Delay in the diagnosis and specific treatment of systemic toxocariasis can result in pulmonary, hepatic, central nervous system and ocular involvement with increased morbidity and mortality.[3,8,9,13-15]

Toxocariasis is most often subclinical and self-limiting, but treatment is necessary for symptomatic patients. Among the potentially effective drugs in toxocariasis, albendazole, mebendazole and thiabendazole were shown to be effective associated with systemic corticosteroid therapy to reduce systemic and ocular inflammation.[4,7,12,14,16]

The prevention of human toxocariasis is fundamental and can be done by regularly deworming dogs, by controlling soil contamination with dog feces in areas immediately adjacent to homes and children's play areas, with the regular habit of washing hands after have contact with land and before eating, as well as control geophagy.[8,11,12,15,17]

CASE REPORTS

Case Report 1

Patient, male B.L.M, 36 years old, male, white, farmer, originally from São José do Vale do Rio Preto, Rio de Janeiro, Brazil, previously healthy, alleged progressive decrease in visual acuity in the left eye for 4 years, but due to logistical difficulties, he did not seek help ophthalmic. He denied systemic comorbidities, daily use of eye drops, trauma and eye surgery. He stated that he has always worked in the fields since childhood, having direct contact with domestic animals such as dogs and cats.

On ophthalmologic examination, the patient had a visual acuity of 20/20 in the right eye (RE) and counts fingers at 4 meters in the left eye (LE).

In biomicroscopy there were no changes. Intraocular pressure of 12 mmHg in both eyes (BE) measured at 11:00.

The RE retinography was within the normal range. (Figure 1)

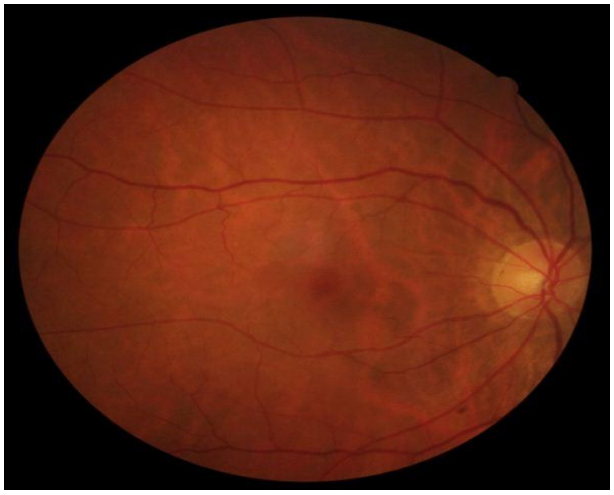

Figure 1: Right Wrist The RE retinography was within the normal range.

Examination of the LE showed an optic disc with difficult delimitation, with a fibrotic beam coming out of the disc and going towards the retinal temporal periphery with elevation of the ipsilateral temporal vascular arcade. Areas of chorioretinal atrophy at the posterior pole of approximately 6 disc diameters. Retinas applied. (Figures 2 and 3)

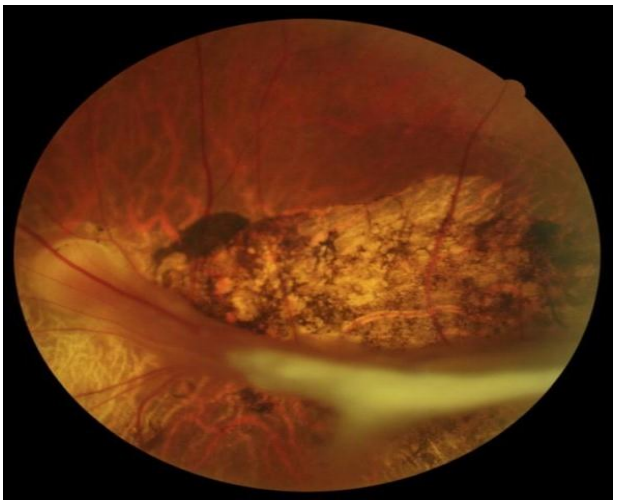

Figure 2: Areas of chorioretinal atrophy at the posterior pole of approximately 6 disc diameters. Retinas applied.

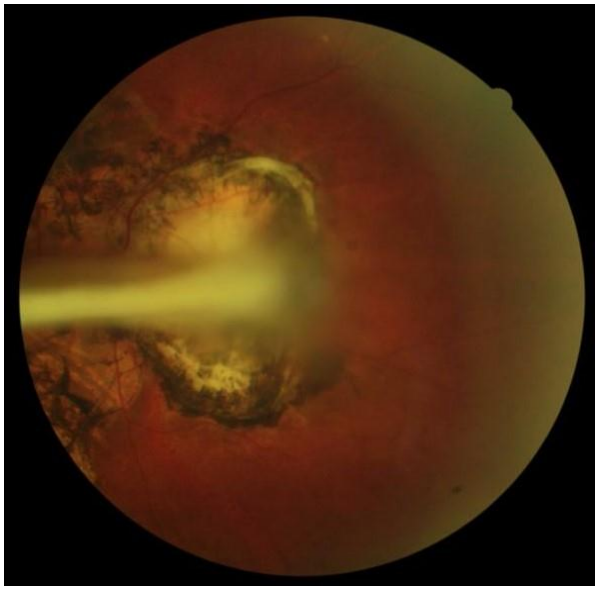

Figure 3: Areas of chorioretinal atrophy at the posterior pole of approximately 6 disc diameters. Retinas applied.

In view of the combination of clinical and epidemiological data, ELISA serology was requested for Toxocara, which was IgG positive and IgM negative. Due to the absence of apparent signs of infection, a conservative approach was chosen, with the patient being regularly monitored by the Ophthalmology department.

CASE REPORT 2

T.L.M, 19 years old, male, white, student, from São José do Vale do Rio Preto, Rio de Janeiro, Brazil, without systemic comorbidities, alleging blurring and visual clouding that started 6 months ago with recent worsening of symptoms in the LE. He denied other eye complaints or associated symptoms.

No history of trauma, eye surgeries or procedures. He stated that his brother, in a previous consultation, was diagnosed with ocular toxocariasis. In his epidemiological history, he claimed to help him with the farm on weekends and that he also had contact with domestic animals, such as dogs.

Uncorrected visual acuity was 20/20 in the OD and 20/80 in the LE.

Biomicroscopy of the anterior segment of the LE showed a slight anterior chamber reaction. No more changes.

Intraocular pressure was 13 and 12 mmHg (8:30).

The RE retinography was physiological (Figure 4)

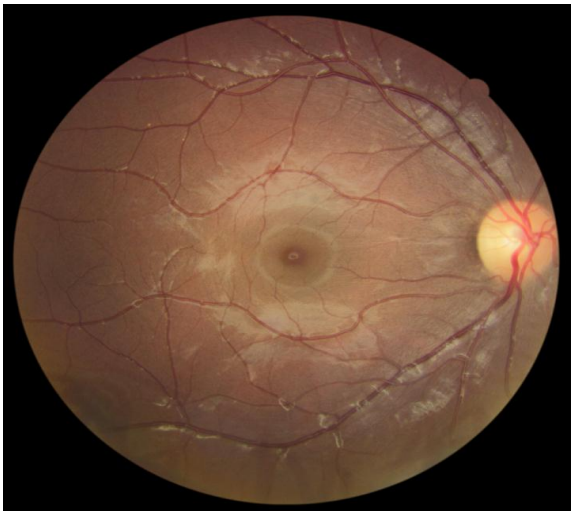

Figure 4: The RE retinography was physiological.

Intraocular pressure was 13 and The LE examination showed a regular optic disc, mild vitritis, granulomatous lesion in the posterior pole inferior to the macula, with vitreoretinal proliferation that caused folds of the internal limiting membrane and with a probable sickle-shaped epiretinal membrane . (Figure 5)

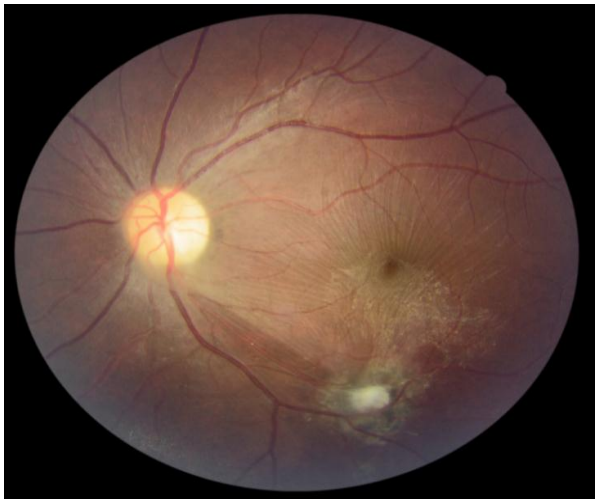

Figure 5: The RE retinography.

The LE After collecting the clinical history and joining with the epidemiological and family data of the patient, laboratory tests were requested that were normal and ELISA serology for Toxocara IgM reactive and IgG and negative. The patient, who had a recent decrease in visual acuity associated with signs of active inflammation, was treated with therapy with albendazole 400 mg, twice a day for one month associated with oral systemic corticosteroid therapy for 3 months, with improvement in the condition. After the clinical treatment, there was a regression of the condition with an improvement in the visual acuity of the LE to 20/30, and the surgical treatment vitrectomy was not chosen.

Both patients are under regular follow-up by the retina sector, being oriented on the prevention of toxocariasis and asking other family members to attend the

ophthalmology sector so that other cases of toxocariasis could be diagnosed early, thus avoiding late diagnoses with permanent retinal sequelae.

DISCUSSION

Toxocara canis can cause severe blindness in children and adults worldwide, which makes toxocariasis a major public health problem. In the epidemiological history, the report of close contact with domestic dogs significantly increases the chance of toxocariasis. In addition, contact with the ground (parks, squares and the use of sandboxes in schools) is an important risk factor for infection.[3,15,18,19-21]

Recent studies show a higher risk of seropositivity for Toxocara in rural regions, where basic sanitation is precarious and the load of stray animals is high.[4,5,8,11,18] The patients in the report were from rural areas, lived in the same household, lived with domestic animals and had direct contact with the soil, which corroborates the hypothesis of toxocariasis. Therefore, a detailed anamnesis is essential to compose the clinical history and guide diagnostic hypotheses.

The clinical symptoms of OT vary according to the degree of ocular involvement and the time of diagnosis, being characterized by chorioretinal granuloma, retinochoroiditis, vitroretinal traction, papillitis, endophthalmitis and keratoconjunctivitis. [6,9,14,22-24]

The present report presents two patients living in the same household with typical clinical and epidemiological conditions, characterized by the presence of fibrotic beams of the optic disc towards the macula, with areas of chorioretinal atrophy in the first case and presence of a granuloma in the posterior pole with traction vitreo-macular in the second case, both being unilateral involvement as the most found in the literature.

The diagnosis consists of the combination of clinical and epidemiological data and complementary exams, both laboratory and imaging, since there may be no specific clinical symptoms of OT.[5.22-25]

In some cases, with the typical granuloma seen at indirect ophthalmoscopy, the diagnosis is not difficult. However, in other cases with leukocoria, media opacities and vitreous inflammation, the use of ultrasonography as a complementary exam is indispensable, an exam that, due to the transparency of the media of the patients in the report, was not necessary.[6,13,18-22]

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CONCLUSION

OT is an uncommon parasitic infection worldwide that mainly affects children, being found in rural and metropolitan areas. It is a rare disease with a clinical spectrum that is difficult to establish. The same can be manifested by posterior and peripheral pole granulomas, diffuse endophthalmitis and fibrotic beams of the optic disc towards the retinal periphery or the macula.

The diagnosis is essentially clinical, based on the morphology of the lesion and on laboratory data and imaging tests. Treatment is directed at complications arising from intraocular inflammation and traction of the vitreous membrane. The use of anthelmintics such as albendazole and systemic corticosteroids are the target clinical therapy. Early vitrectomy is valuable for both diagnosis and treatment because it early addresses vitreous traction, granulomas, and fibrotic beams secondary to this infection.

Competing Interests

Authors have declared that no competing interests exist.

Consent

All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

Ethical Approval

Not applicable

BIBLIOGRAPHIC REFERENCES

1. ALLAN, Christopher H.; 1- Martinez J, Ivankovich-Escoto G, Wu L. Pediatric Ocular Toxocariasis in Costa Rica: 1998-2018 Experience. Ocul Immunol Inflamm, 2020 Aug 18; 1-6.
2. Zhang T, Guo D, Xu G, Jiang R. Ocular Toxocariasis: Long-Term Follow-Up and Prognosis of Patients following Vitrectomy. Ocul Immunol Inflamm, 2020 Apr 2; 28(3): 517-523.
3. Hernanz I, Moll-Udina A, Llorenç BV, Adan CA. Ocular Toxocariasis: Beyond Typical Patterns through the New Imaging Technologies. Ocul Immunol Inflamm, 2020 Aug 24; 1-7.
4. Rajaona RA, Ranoasy NF, Raharimanantsoa OL, Randrianarisoa HL, Randrianjafisamindrakotroka O, Raobela L. Toxocarose oculaire bilatérale : à propos d'un cas à Madagascar [Bilateral ocular toxocariasis: Case report from Madagascar]. J Fr Ophtalmol, 2020 Oct; 43(8): e273-e274.
5. Dutheil C, Korobelnik JF, Rougier MB, Delyfer MN. Aspect d'une toxocarose oculaire chez un garçon de 8 ans [Ocular toxocariasis findings in an 8-year-old boy]. J Fr Ophtalmol, 2018 Jan; 41(1): 94-95. French.
6. Leung AKC, Barankin B, Hon KLE. Cutaneous Larva Migrans. Recent Pat Inflamm Allergy Drug Discov, 2017; 11(1): 2-11.
7. Dietrich CF, Cretu C, Dong Y. Imaging of toxocariasis. Adv Parasitol. 2020; 109: 165-187.
8. Cardoso AEC, Cardoso AEO, Talhari C, Santos M. Update on parasitic dermatoses. An Bras Dermatol, 2020 Jan-Feb; 95(1): 1-14.
9. Auer H, Walochnik J. Toxocariasis and the clinical spectrum. Adv Parasitol, 2020; 109: 111-130.
10. Molina B, González-Vicent M, Valls I, Díaz MÁ. Ocular toxocariasis in a pediatric patient undergoing a bone marrow transplantation. Enferm Infecc Microbiol Clin (Engl Ed), 2019 Nov; 37(9): 617-618.
11. Inchauspe S, Echandi LV, Dodds EM. Diagnosis of ocular toxocariasis by detecting antibodies in the vitreous humor. Arch Soc Esp Oftalmol (Engl Ed), 2018 May; 93(5): 220-224.
12. Mazur-Melewska K, Mania A, Sluzewski W, Figlerowicz M. Clinical pathology of larval toxocariasis. Adv Parasitol, 2020; 109: 153-163.
13. Fan CK. Pathogenesis of cerebral toxocariasis and neurodegenerative diseases. Adv Parasitol. 2020; 109: 233-259.
14. 1Liu J, Li S, Deng G, Yang W, Chen W, Lu H. Ultrasound biomicroscopic imaging in paediatric ocular toxocariasis. Br J Ophthalmol, 2017 Nov; 101(11): 1514-1517.
15. Shyu LY, Chen KM, Lai SC. Matrix metalloproteinase-2 and matrix metalloproteinase-9 in mice with ocular toxocariasis. Parasitol Res., 2019 Feb; 118(2): 483-491.
16. Chen Q, Gu J, Jiang R, Zhou M, Chang Q. Role of ultrasound biomicroscopy in diagnosis of ocular toxocariasis. Br J Ophthalmol, 2018 May; 102(5): 642-646.
17. Taylan-Ozkan A. Sources and seroprevalence of toxocariasis in Turkey. Adv Parasitol, 2020; 109: 465-482.
18. Adeel AA. Seroepidemiology of human toxocariasis in North Africa. Adv Parasitol, 2020; 109: 501-534.
19. Wang H, Tao Y. Clinical Features and Prognostic Factors in Northern Chinese Patients with Peripheral Granuloma Type of Ocular Toxocariasis: A Retrospective Cohort Study. Ocul Immunol Inflamm, 2020 Nov 13; 1-6.
20. Lötsch F, Vingerling R, Spijker R, Grobusch MP. Toxocariasis in humans in Africa - A systematic review. Travel Med Infect Dis., 2017 Nov-Dec; 20: 15-25.
21. Abd El-Aal NF, Basha MAA, Eid AM. New insight into the diagnostic cut-off value of serum anti-Toxocara IgG for ocular toxocariasis in uveitis patients. J Helminthol, 2018 Nov 20; 94: e12.
22. Iddawela D, Ehambaram K, Bandara P. Prevalence of Toxocara antibodies among patients clinically suspected to have ocular toxocariasis: A retrospective descriptive study in Sri Lanka. BMC Ophthalmol, 2017 Apr 24; 17(1): 50.
23. Kwon JW, Sim Y, Jee D. Association between intermediate uveitis and toxocariasis in the Korean population. Medicine (Baltimore), 2017 Feb; 96(5): e5829.
24. Khubchandani IT, Bub DS. Parasitic Infections. Clin Colon Rectal Surg, 2019; 32(5): 364-371.
25. Sahu ES, Pal B, Sharma T, Biswas J. Clinical Profile, Treatment, and Visual Outcome of Ocular Toxocara in a Tertiary Eye Care Centre. Ocul Immunol Inflamm, 2018; 26(5): 753-759.