Ciliochoroidal effusion syndrome associated with mebendazole systemic treatment

Mebendazole (Vermox; Johnson & Johnson Inc, New Brunswick, NJ) is an effective antiparasite drug used for the treatment of *Oxyurus vermicularis* infections (oxyuriasis).[1] Although theoretically considered as a well-tolerated drug with few adverse effects, we report a unique case of transient ciliochoroidal effusion that occurred in temporal association with mebendazole therapy.

A 43-year-old female visited our clinic with bilateral decreased vision and bilateral headache involving both eyes for 3 days. She had a history of taking medications, including mebendazole 500 mg for oxyuriasis that she started 1 week prior to her initial examination. She had no past ocular diagnoses or surgeries. She was not using any ocular medications. The patient's medical history was not significant for hypertension or chronic inflammatory demyelinating polyneuropathy. She had no allergy history.

On presentation, the patient's best-corrected visual acuity was 20/200 in both eyes. Intraocular pressure (IOP) was 37 mm Hg in her right eye and 34 mm Hg in her left eye. Examination showed a shallow anterior chamber, no pigmented cells, and no vitritis in both eyes. Dilated fundus examination revealed bilateral blurred optic disc margins (Fig. 1A). On optical coherence tomography (OCT) there was subretinal fluid, intraretinal fluid, and choroidal folds in the macula (Fig. 1A). Fluorescein angiography showed bilateral optic disc leakage, confirming bilateral blurred optic disc margins (Fig. 1A). Ultrasound transverse B−scan revealed a diffusely thickened choroid with shallow peripheral choroidal detachment (Fig. 1A). Ultrasound biomicroscopy displayed slit-like closed angles and anterior rotation of the ciliary processes (Fig. 1A). A systemic work-up, including a complete blood count, comprehensive metabolic panel, inflammatory indices, TORCH complex, and serum and urine protein electrophoresis and immunofixation, and magnetic resonance imaging of the head were within normal limits. Neurologic examination was within normal limits. Nonetheless, the infectious disease consultant suggested starting pyrantel 250 mg/5 mL 3 spoons for 3 days because a correlation between mebendazole and ciliochoroidal effusion syndrome was hypothesized. The patient was administered methylprednisolone 40 mg intravenously daily, and betamethasone + nefazoline + tetracycline eye drops were administered 4 times per day.

At 8 weeks, the patient's visual acuity improved to 20/20 in both eyes. Her IOP was 18 mm Hg in both eyes. Dilated fundus examination showed a net-edged optic disc, and no signs of choroidal effusion were noted (Fig. 1B). OCT images of the macula showed a significant reduction of choroidal folds and sub- and intraretinal fluid (Fig. 1B).

At 24 weeks, the patient was referred to the retina clinic complaining of visual deterioration. A thorough medical history revealed that the patient was taking mebendazole again on her own to re-treat the *O. vermicularis* infection. Her visual acuity was 20/40 in both eyes. Her IOP was 23 mm Hg in her right eye and 24 mm Hg in her left eye Repeat OCT in both eyes showed ciliochoroidal effusion (Fig. 2). The patient was advised to stop taking mebendazole and switch to pyrantel after this visit. At 32 weeks, the patient's uncorrected visual acuity improved to 20/20, and her IOP was 19 mm Hg in both eyes. OCT images showed near-complete resolution of sub- and intraretinal fluid and choroidal folds (Fig. 2). At the final examination at 40 weeks, the patient was stable. After excluding any possible cause of the symptomatology, the patient was diagnosed with a diagnosis of ciliochoroidal effusion syndrome, drug induced.

Our patient manifested a rare case of bilateral ciliochoroidal effusion syndrome. Because the symptoms occurred in temporal association with administration of an antiparasite drug used for the *O. vermicularis* infection therapy, we hypothesize that mebendazole use during oxyuriasis could have served as the common pathogenic mechanism for these seemingly unrelated findings.

In drug-induced ciliochoroidal effusion, bilateral acute angle closure and bilateral blurred optic disc margins are commonly reported side effects. Lee et al.[2] reported uveal effusion, ciliary-body edema, and anterior rotation of the lens−iris diaphragm with sulfonamide-derived medications. Recently, topiramate, which is used mainly for treating epilepsy and preventing migraine, has been reported as a cause of diverse ocular side effects. In a case report, Malagola et al.[3] found a massive choroidal effusion with posterior retinal folds and papillary edema after administration of acetazolamide immediately after cataract surgery. These results suggest that the drug-induced transient ciliochoroidal effusion and angle closure have the same mechanism, although the causative drugs can be different.

Mebendazole is a well-tolerated drug widely used in the treatment of parasitic infections. Although theoretically considered to have few adverse effects, the timing of the exposure to mebendazole supports the role of this drug being involved in the ciliochoroidal effusion. The exact mechanism of drug-induced bilateral acute angle closure and ciliochoroidal effusion syndrome is not fully understood. Ikeda et al.[4] suggested that this syndrome may occur after ocular inflammation, systemic diseases, unknown postoperative mechanisms, trauma, venous congestion, or drugs. Circulatory choroid disorders appear to play a role in the development of the greater permeability of the choroidal vessels.[5]

We also find it plausible that an increase in pressure in the choroidal vessels may have precipitated the choroidal effusion. It is thinkable that the pre-existing condition of choroidal disorders (e.g., pachychoroid) in our patient has

https://doi.org/10.1016/j.jcjo.2022.06.012
ISSN 0008-4182

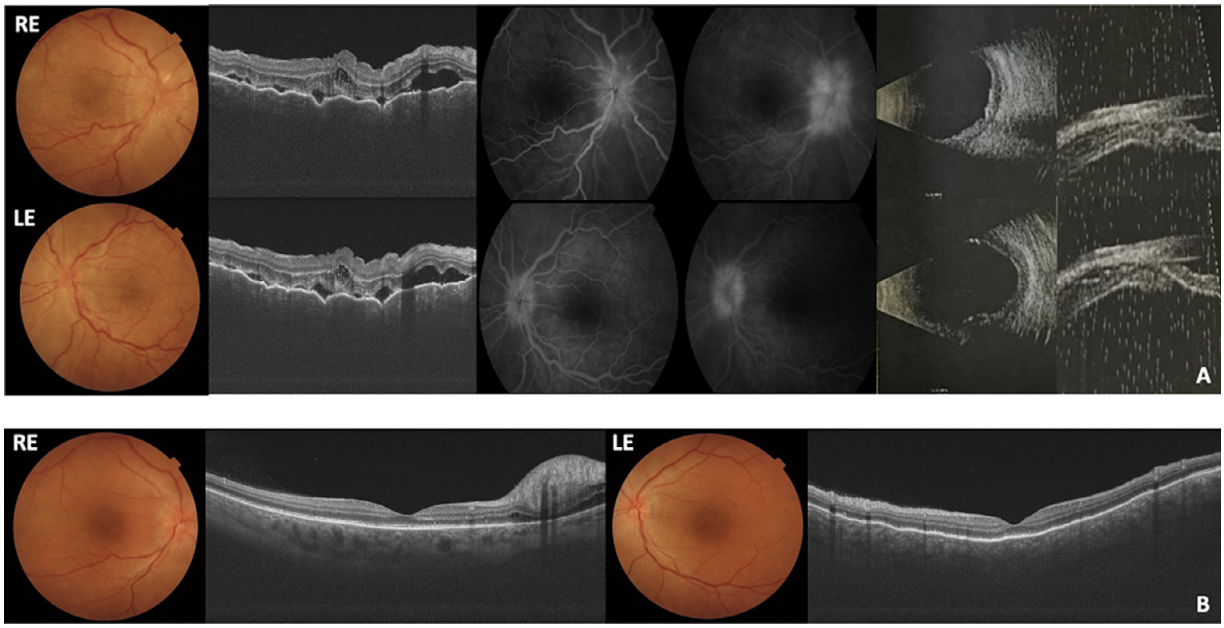

Fig. 1—At presentation, fundus photograph shows bilateral blurred optic disc margins. The optical coherence tomography image shows subretinal fluid, intraretinal fluid, and choroidal folds in both eyes. At presentation, fluorescein angiography shows bilateral optic disc leakage in the late phase. Ultrasound transverse B–scan revealed diffusely thickened choroid with shallow peripheral choroidal detachment. Ultrasound biomicroscopy displayed slit-like closed angles and anterior rotation of the ciliary processes (A). At 8 weeks, fundus photographic examination showed a slight blurred optic disc margin in the right eye and a net-edged optic disc in the left eye. Ocular coherence tomography image of the macula showed significantly reduction of choroidal folds and sub- and intraretinal fluid in both eyes (B).

rendered her vulnerable to choroidal effusion caused by temporary increases in uveal venous pressure.

In conclusion, acute drug-induced choroidal effusion with angle closure is an idiosyncratic reaction to systemic medications that implies extravascular fluid accumulation within the ciliochoroidal layer. This momentary disorder might be quickly resolved by immediate identification and subsequent drug discontinuation. Although the exact mechanism of our patient's transient extravascular fluid accumulation in the choroid is unknown, we believe that mebendazole should be added to the list of possible causative agents of ciliochoroidal effusion syndrome.

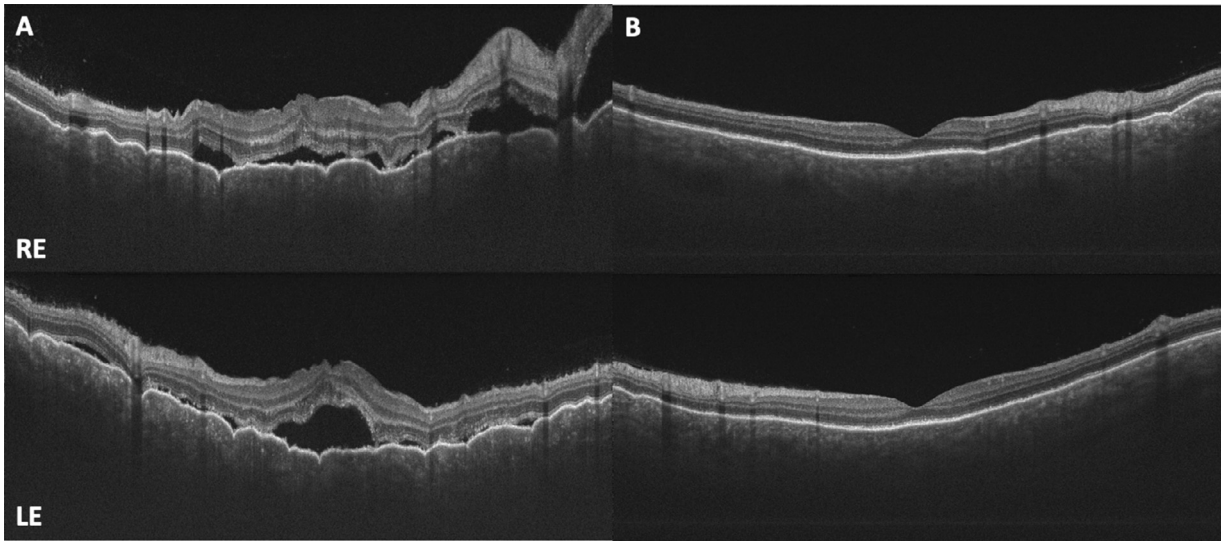

Fig. 2—At 24 weeks, a thorough medical history revealed that the patient was taking mebendazole again on her own to re-treat the *O. vermicularis* infection. Optical coherence tomography images showed ciliochoroidal effusion in both eyes (A). At 32 weeks, after stopping mebendazole, structural optical coherence tomography images exhibited near-complete resolution of sub- and intraretinal fluid and choroidal folds (B).

Pasquale Viggiano, Maria Oliva Grassi, Giuseppina Monteleone, Silvana Guerriero, Francesco Boscia
University of Bari "Aldo Moro," Bari, Italy.

Originally received Jun. 2, 2022. Accepted Jun. 23, 2022.

Correspondence to Pasquale Viggiano; pasquale.viggiano90@gmail.com.

References

1. Lecomte Ramioul S. [Treatment of oxyuriasis with mebendazole: therapeutic schema for use in a children's community]. Rev Med Liege 1975;30:733–6.
2. Lee GC, Tam CP, Danesh-Meyer HV, Myers JS, Katz LJ. Bilateral angle closure glaucoma induced by sulphonamide-derived medications. Clin Exp Ophthalmol 2007;35:55–8.
3. Malagola R, Arrico L, Giannotti R, Pattavina L. Acetazolamide-induced ciliochoroidal effusion after cataract surgery: unusual posterior involvement. *Drug Des Dev Ther* 2013;7:33–6.
4. Ikeda N, Ikeda T, Nagata M, Mimura O. Ciliochoroidal effusion syndrome induced by sulfa derivatives. Arch Ophthalmol 2002;120:1775.
5. Ikeda N, Ikeda T, Nagata M, Mimura O. Pathogenesis of transient high myopia after blunt eye trauma. Ophthalmology 2002;109:501–7.

Footnotes and Disclosure

The authors have no proprietary or commercial interest in any materials discussed in this article.