

Coats disease associated with vasoproliferative tumor treated with cryotherapy and intravitreal injections of triamcinolone

Doença de Coats associada a tumor vasoproliferativo tratada com crioterapia e injeções intravítreas de triancinolona

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ABSTRACT

Report of a case of Coats disease associated with retinal vasoproliferative tumor in a young female patient with two peripheral vascularized tumors and lipid exudation involving the macula and peripapillary region with serous retinal detachment areas and pre-papillary fibrous proliferation. The proposed and performed treatment was the intravitreal injection of triamcinolone acetate to decrease the tumor exudation, followed by photocoagulation of the peripheral areas of telangiectasia without subretinal fluid and cryotherapy of the tumors. Despite that this is a rare and difficult to treat combination, in this case report, success was obtained in receding the tumor masses and reapplying the retina, leading to anatomic and visual stabilization.

Keywords: Retinal detachment/etiology; Retinal vessels/abnormalities; Fluorescein angiography; Cryotherapy; Triamcinolone/administration & dosage.

RESUMO

Relato de um caso de Doença de Coats associada a tumor vasoproliferativo de retina em uma paciente jovem com duas tumorações vascularizadas periféricas e exsudação lipídica acometendo mácula e região peripapilar com áreas de descolamento de retina seroso e proliferação fibrosa pré-papilar. O tratamento proposto e realizado foi a injeção intra-vítrea de triancinolona para diminuir a exsudação do tumor, seguida de fotocoagulação periférica das áreas de telangiectasia sem fluido subretiniano e criocoagulação dos tumores. Apesar de se tratar de uma associação rara e de difícil tratamento, neste relato de caso, obteve-se êxito em regredir as massas tumorais e reaplicar a retina, levando à estabilização anatômica e visual.

Descritores: Descolamento de retina/etiologia; Vasos retinianos/anormalidades; Angiofluoresceinografia; Crioterapia; Triancinolona/administração & dosagem.

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INTRODUCTION

Coats disease is an idiopathic condition characterized by telangiectasia and aneurysms in retinal vessels, leading to subretinal and intra-retinal fluid.⁽¹⁾ Despite the presence of areas of capillary non-perfusion detected during fluorescein angiography, posterior segment neovascularization is unusual in these cases.⁽²⁾

The disease affects men three times more than women and there are no reports of racial or ethnic predilection. It is unilateral in 80-95% cases. Any patient with presumed bilateral Coats disease should undergo evaluation for systemic conditions that cause exudative retinopathy that mimic Coats. The average age at diagnosis is 5 years, ranging from 1 month old to 63 years old.⁽¹⁾

The main symptoms are reduced visual acuity (43%), strabismus (23%) and leukocoria / xantocoria (20%). Approximately 90% of the eyes have a normal anterior segment at the biomicroscopic examination. The main findings include retinal telangiectasia (100%), intraretinal exudation (99%), and exudative retinal detachment (81%).^(1,3)

Retinal vasoproliferative tumors (RVT) may be primary or secondary to other retinal disorders such as retinitis pigmentosa, chronic retinal rhegmatogenous detachment, pars planitis, among others. The association with Coats disease is uncommon, but already described: in a series of 334 cases with RVT, Shields et al described 11 patients with Coats disease.⁽³⁾ The treatment of these patients is challenging due to the association of two complex retinal diseases, and there is no consensus in the literature on the rarity of those cases.

CASE REPORT

A 15 year old and previously healthy female patient came to our service complaining of progressive Visual Acuity (VA) loss on her right eye (RE) over the last three months. She denied any other ocular or systemic symptoms associated, as well as family history of eye diseases.

The initial examination showed best corrected VA of counting fingers at 3m in the right eye (RE) and 1.0 in the left eye (LE). Slit lamp examination was unremarkable. Fundus examination on the RE revealed intense lipid exudation involving the macula and around the optic disc; serous retinal detachment areas; pre-retinal membranes near the optic disc (Figure 1); two peripheral vascularized tumors in the superior temporal quadrant (Figure 2) and one in the inferior nasal quadrant. The LE revealed no changes. Ultrasonography of the RE noticed an elevated retinal lesion in the superior temporal quadrant, measuring 10,2x5,2 mm. Fluorescein angiography (FA) showed large areas of retinal telangiectasia, early leakage in the telangiectatic areas which increased in later stages and leakage from the vascular tumors.

Due to the vascularized retinal tumors, peripheral and subretinal exudation, the diagnostic hypotheses included primary vasoproliferative tumor, vasoproliferative tumor secondary to Coats disease, or Von Hippel Lindau syndrome (VHL). The patient was then submitted to systemic clinical investigation with nuclear magnetic resonance (NMR) imaging of the head and cervical spine, computed tomography (CT) of the abdomen, catecholamine dosage, vanilmandelic acid and urinary metanephrines, as well as neurological and endocrinological evaluation. Cranial NM showed intraocular lesion at the RE compatible with the funduscopic examination. The other examinations and assessments showed no changes and ruled out the presence of any other systemic tumor. Moreover, the

absence of afferent and efferent vessels in peripheral mass and the diffuse nature of the disease moved away the hypothesis of VHL disease. The presence of exudation extending to the posterior pole, in addition to the diffuse leakage noted in fluorescein angiography examination confirmed the diagnosis of retinal vasoproliferative tumors secondary to Coats disease. The proposed and accomplished treatment was intravitreal injection treatment (IVT) of triamcinolone acetonide to decrease the tumor exudation, followed by photocoagulation of the peripheral areas of subretinal fluid without telangiectasia. Twelve days later, the patient underwent cryocoagulation of the tumors.

Since the first postoperative month, it was noted subjective improvement of VA in the RE, progressive regression of lipid exudation, and marked reduction in tumor size. After 3 months, it was found residual tumor activity on FA. A new IVT of triamcinolone was performed followed after 2 weeks by a new tumor cryocoagulation.

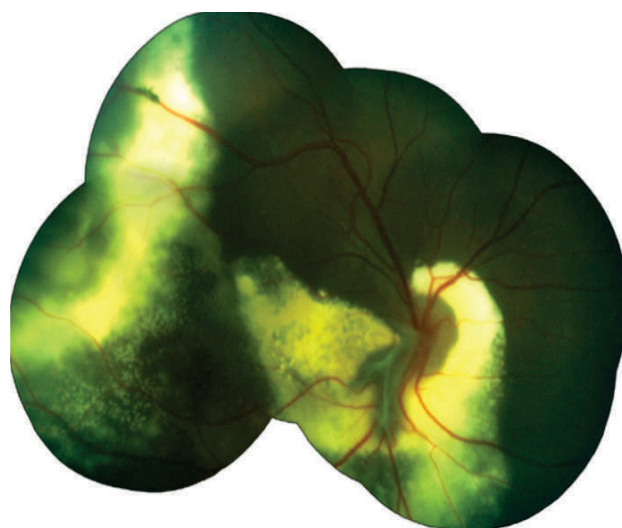


Figure 1: Retinography of the right eye shows intense lipid exudation involving the macula and peripapillary region associated to serous retinal detachment and pre-papillary fibrous proliferation.

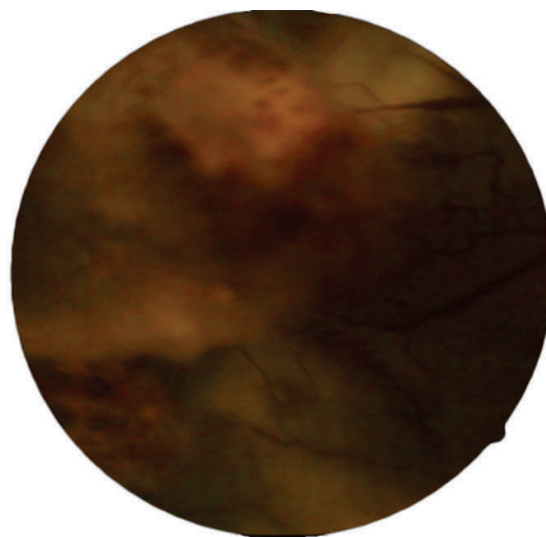


Figure 2: Two vascularized tumors in the superior temporal quadrant.

The patient progressed with subjective improvement in visual quality of her RE, keeping, however, VA of count fingers at 3 m. The lipid exudation decreased and vasoproliferative tumors involuted completely. Sectorial photocoagulation was performed in the lower half of the retina due to the presence of telangiectatic vessels identified in FA. Six months after the second cryocoagulation, she maintained the same VA, but with subjective improvement and complete involution of the tumors (Figure 3). After 18 months, she underwent phacoemulsification due to the development of subcapsular cataract. After two years of follow up, the disease remained stable, with no need for new therapeutic intervention (Figure 4).

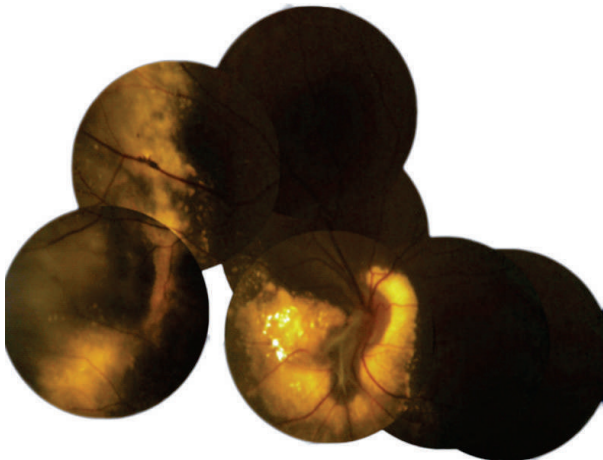


Figure 3: Retinography after evolution of tumor 6 months after cryocoagulation.

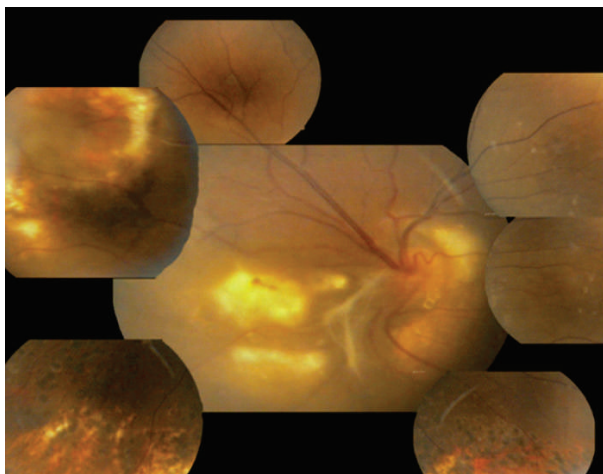


Figure 4: Retinography after 2 years of treatment.

DISCUSSION

Retinal vasoproliferative tumors are benign vascular masses that do not only involving the retina, but occasionally the retinal pigment epithelium and choroid. RVT is classified as primary (idiopathic- 74% of the cases), or secondary (26%). Both are mostly found in the lower and inferior temporal fundus, commonly in the periphery, and can produce retinal exudation, detachment and macular edema, with severe visual acuity impairment. The

primary RVT tends to be solitary, small and peripheral. The secondary RVTs are most often multifocal and bilateral. Both types can have similar features and complications, but secondary RVT are more likely to affect younger, bilateral patients with multifocal lesions and usually with poor VA. The diagnosis of RVT, particularly in younger patients, should lead to a detailed ocular and systemic investigation for an underlying condition.⁽³⁾

In a series of 334 cases of RVTs, Shields observed an average age of onset of 44 years. Of the 67 eyes with secondary RVTs the 3 most common ocular conditions were: retinitis pigmentosa (22%), pars planitis (21%) and Coats disease (16%).⁽³⁾ In our case, we confirmed the association of Coats disease in a female patient and vasoproliferative tumors. The correct diagnosis was crucial for the choice of treatments and good anatomical outcomes.

Shields et al.⁽⁴⁾ classified Coats disease in 5 phases: only telangiectasia Retinal in Phase 1; telangiectasia and exudation phase 2 (2A: extrafoveal exudation; 2B: foveal exudation); exudative retinal detachment (RD) in stage 3 (3A RD subtotal; 3B: complete RD); total RD with neovascular glaucoma at stage 4; and advanced disease end-stage set to stage 5. This classification is useful for the therapeutic management and prognosis. Considering that our patient already had exudative retinal detachment at the moment of diagnosis, she was classified as stage 3 Coats disease with secondary peripheral RVTs, which represent a therapeutic challenge.

The patients in stage 1 may be followed conservatively or be treated with laser photocoagulation in the abnormal vessels. In phase 2, cryotherapy and / or laser ablation can be performed depending on the severity, location and presence of subretinal fluid. Cryotherapy is preferred in stage 3 if the detachment is not bullous. Surgical correction with external drainage of subretinal fluid can be carried out in extreme cases, such as bullous detachments that prevent cryotherapy. In stage 4, due to consequent eye pain glaucoma, enucleation may be required. In Phase 5, amaurotic and painless eyes do not require aggressive treatment.

The triamcinolone acetamide (TA) was the first intravitreal corticosteroids used for the treatment of Coats disease. Osman Othman et al.⁽⁵⁾ in a study of 15 patients with stage 3 Coats, obtained visual improvement in 93% of cases treated with IVT of triamcinolone and laser photocoagulation or cryotherapy. At 12 months of follow-up, 33% of patients developed cataracts, as well as observed in the case reported.

Bergstrom et al.,⁽⁶⁾ performed a treatment on 5 children with stage 3A-B Coats disease with IVT 4mg of triamcinolone, followed by cryotherapy 4 to 16 weeks after IVT. Of the patients treated, 80% had increased intraocular pressure, 60% developed cataracts, and 60% of patients had inoperable rhegmatogenous detachments associated with severe vitreoretinal proliferation. Only one of the five patients had VA more than 1/200, without developing cataracts.

Therefore, outcomes after IVT triamcinolone are quite variable and depend on associated factors. In the case described, the intravitreal steroid was used in order to decrease exudation while cryotherapy was added at the tumor areas. We observed a progressive tumor shrinkage and consequent decrease of exudative detachment. Cataract formation was observed as a side effect, and surgical extraction was required. Final anatomical outcome after years of follow-up was excellent, despite no visual gain was noticed.

Recently, articles cite the use of drugs anti-vascular endothelial growth factor, such as bevacizumab as adjuvant in the treatment of cases of Coats disease. Villegas et al.,⁽⁷⁾ in a study with 24 children with Coats Disease treated with injections of be-

vacizumab associated with laser photocoagulation, as a relatively standardized treatment protocol achieved complete resolution of the exudative retinal detachment and anatomical improvement in all cases. However, no RVT was reported in this series, and the amount of VEGF secreted by RVT is believed to be low and the vessels are more mature, and therefore less responsive to anti-VEGF treatment.

Thus, we conclude that vasoproliferative tumors associated to Coats disease can be successfully treated, leading to anatomically and visual stabilization. In our case, photocoagulation of areas with no associated retinal detachment, supplemented by cryotherapy of the tumors and vascular abnormalities at the detached areas, was successful in receding the tumor masses and retinal reattachment. The TA was used as an adjunct in order to reduce exudation generated by the underlying disease and by cryotherapy treatment.

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