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SOLITARY RETINAL CAPILLARY HEMANGIOMA IN A PATIENT WITH BILATERAL CHORIORETINAL COLOBOMA

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Purpose: To report a case showing a very rare association of chorioretinal coloboma and retinal capillary hemangioma in a previously healthy patient.

Methods: Observational case report.

Results: A 21-year-old woman presented at our clinic for vision screening. She had a history of bilateral chorioretinal coloboma with amblyopia in her left eye. Her best-corrected visual acuity was 20/25 in her right eye and 20/200 in her left eye. On slit-lamp examination, iris coloboma was observed in the left eye. Fundus evaluation showed inferior chorioretinal coloboma in both eyes, and an elevated, round, and orange-red retinal lesion with feeder vessels localized in the midperipheral region of the right eye. The patient was diagnosed as having solitary retinal capillary hemangioma and underwent argon laser therapy for treating the tumoral lesion. Diagnostic studies were negative for von Hippel–Lindau disease. This is the first reported case of solitary retinal capillary hemangioma associated with bilateral chorioretinal coloboma.

Conclusion: Chorioretinal coloboma is a congenital defect of the eye caused by improper closure of the embryonic fissure. Retinal capillary hemangioma is a vascular retinal tumor that may occur sporadically or as part of the von Hippel–Lindau syndrome. We report a rare association of chorioretinal coloboma and retinal capillary hemangioma in a previously healthy patient.

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Retinal capillary hemangioma is an uncommon vascular tumor of the retina. These tumors can affect any segment of the fundus and vary greatly in their clinical appearance.[1] Retinal capillary hemangioma may occur sporadically or as part of the von Hippel–Lindau (VHL) syndrome.[2] Chorioretinal coloboma results from incomplete closure of the embryonic fissure. It can occur in isolation or in association with other ocular and systemic abnormalities, frequently as part of a syndrome.[3] This report describes the clinicopathologic findings in a young woman who presented with a congenital bilateral chorioretinal coloboma accompanied by a solitary retinal capillary hemangioma in her best-seeing eye.

Case Report

A 21-year-old female student presented at our clinic for vision screening. She had a history of bilateral inferior chorioretinal coloboma and amblyopia in the left eye. At presentation, her vision was stable in both eyes. On ophthalmic examination, the best-corrected visual acuity (Snellen chart) was 20/25 in the right eye and 20/200 in the left eye. Apart from bilateral chorioretinal coloboma, the dilated fundus examination revealed a raised, rounded, orange-red retinal lesion, two-disk diameter in size and localized in the nasal midperipheral region, distant from the

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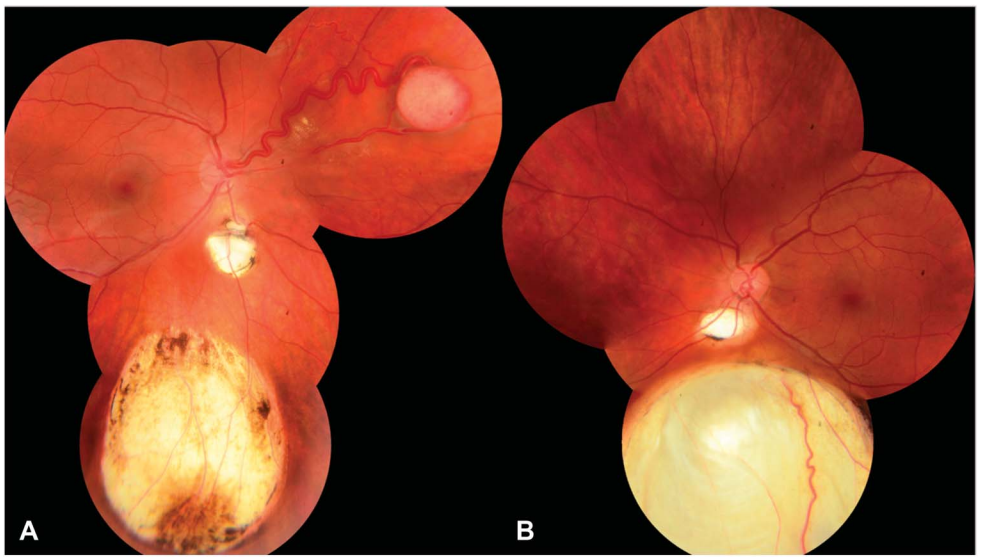

Fig. 1. Color fundus photography. **A.** Dilated fundus examination revealed a raised, rounded, and orange-red retinal lesion, with two-disk diameters, localized in the nasal midperipheral region distant from the chorioretinal coloboma in her right eye. Note the large vessels feeding the tumor. **B.** Chorioretinal coloboma is also observed in her left eye.

chorioretinal coloboma in her right eye. In addition, the tumoral lesion had a large feeder vessel (Figure 1). The growth pattern appeared sessile. The macular area was not affected in both the eyes. Fluorescein angiography clearly indicated early hyperfluorescence coupled with late leakage of the vascular lesion (Figure 2). The patient was diagnosed with solitary retinal capillary hemangioma in the right eye. She was further screened to detect additional hemangiomas that usually occur in association with von Hippel–Lindau syndrome. The systemic clinical and neurologic examination findings were normal. Magnetic resonance imaging findings of the brain, liver, kidney, and pancreas were normal. Genetic analysis for VHL-gene mutation was also negative. There was no family history of either hereditary ocular disease or systemic disease.

Several sessions of argon laser therapy on and around the lesion were performed to achieve feeder vessel collapse (Figure 3). Progressive resolution of the subretinal fluid around the tumor was also reported. However, 6 months after remission, a new subretinal fluid collection placed around the tumor was observed, along with the presence of a new engorged vessel visible inferiorly to the tumor (Figure 4). No additional tumoral lesions were detected in the area. This finding substantiates the fact that a retinal capillary hemangioma could be fed back by a new feeder vessel after several months in remission. A new session of argon laser therapy was sufficient to reduce the exudation and render the tumor inactive (Figure 5). The patient has been followed up every 3 months over a period of 2 years and the clinical features of the treated tumor were unchanged during this period of follow-up.

Discussion

To our knowledge, this is the first reported case of a combination of bilateral chorioretinal coloboma and unilateral retinal hemangioma in a previously healthy patient.

Ocular coloboma is caused due to incomplete closure of the embryonic fissure of the neuroectodermal optic cup around Weeks 5 to 8 of gestation.[4] This condition occurs in 0.14% of the general ophthalmic population.[5] Ocular coloboma is an

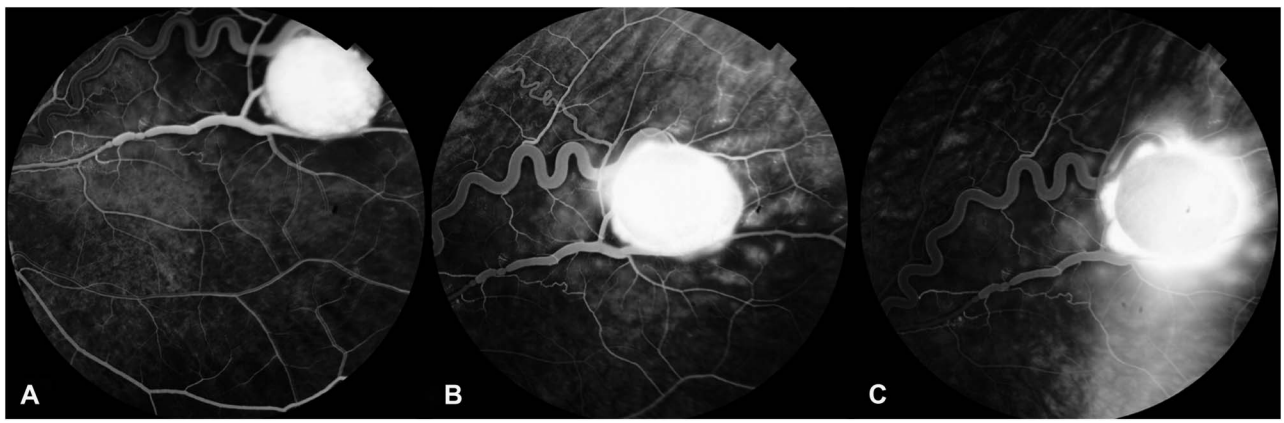

Fig. 2. Fluorescein angiogram. Initial consult (**A**) early hypofluorescence over the area of the tumoral lesion. The mid (**B**) to late (**C**) sequences showed leakage around the lesion. Feeder vessels are observed in all pictures.

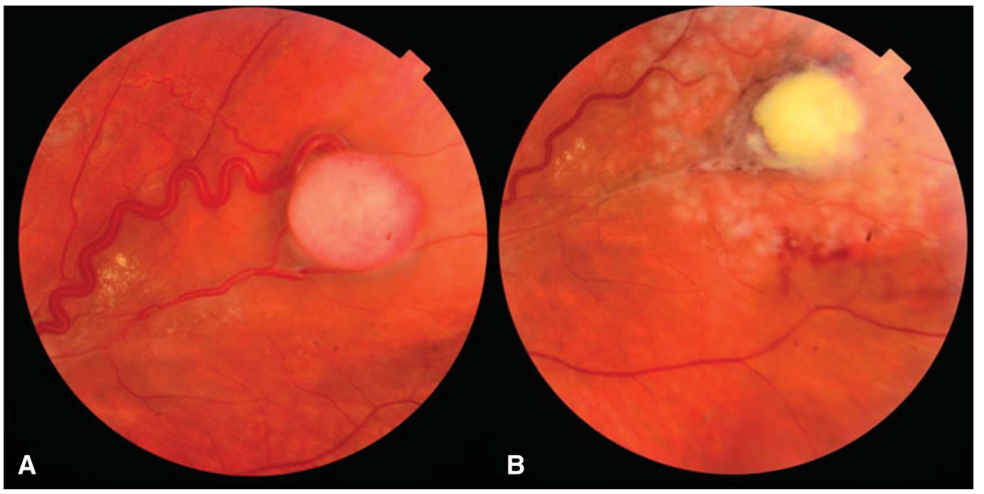

Fig. 3. Sequence of the laser treatment on the tumoral lesion. First visit (**A**) 2 months after starting argon laser therapy on and around the lesion until collapse and cessation of blood flow in the collector vessels (**B**).

isolated defect and is usually a genetically inherited autosomal dominant disorder. Patients with multiple malformations and coloboma may have a clinically recognized malformation syndrome of unknown etiology, a single gene disorder, or a chromosomal abnormality.[6] Chorioretinal coloboma is characterized by the congenital absence of a part of the retinal pigment epithelium and choroid. It appears clinically as a prominent white zone within the ocular fundus, usually at the inferior-nasal quadrant. The lesion consists of a rudimentary retina with a few blood vessels over the sclera that may be ecstatic. The neurosensory retina continues as the intercalary membrane in the area of the coloboma. The presence of choroidal coloboma may induce ischemic conditions not only in the intercalary membrane,[7] but also in the normal retina, which may facilitate the development of choroidal neovascularization. The role of the vascular endothelial growth factor in inducing neovascularization is well known. Von Hippel–Lindau syndrome is characterized by a mutation on chromosome 3p25-26 in the stromal cells, which leads to a dysfunctional VHL protein.[8,9] These cells cannot degrade hypoxia-inducible factor 1a (HIF-1a); therefore, this factor accumulates and causes production of vascular endothelial growth factor, platelet–derived growth factor, erythropoietin, and transforming growth factor–alpha, all of which can lead to capillary proliferation and neovascularization.[9] In addition, abnormally high levels of vascular endothelial growth factor secreted by tumor cells that lack the VHL protein are thought to promote the formation and growth of

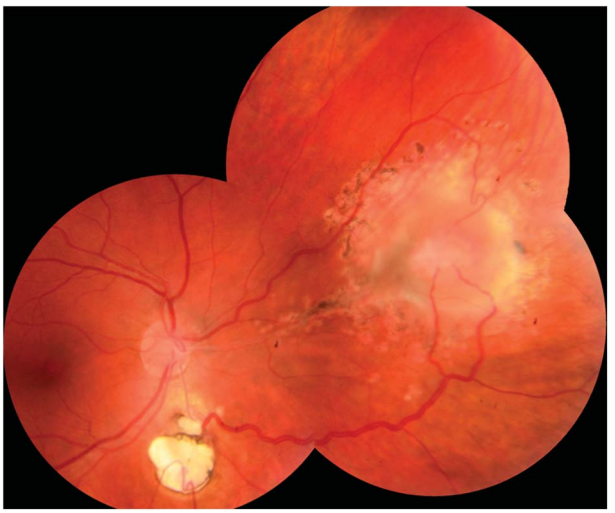

Fig. 4. After 6 months of remission, a new engorged vessel appeared to feed the tumor again. Note the presence of new collector vessels feeding the tumor. Reactivation of the tumoral activity was observed with fluid collection around the retinal hemangioma.

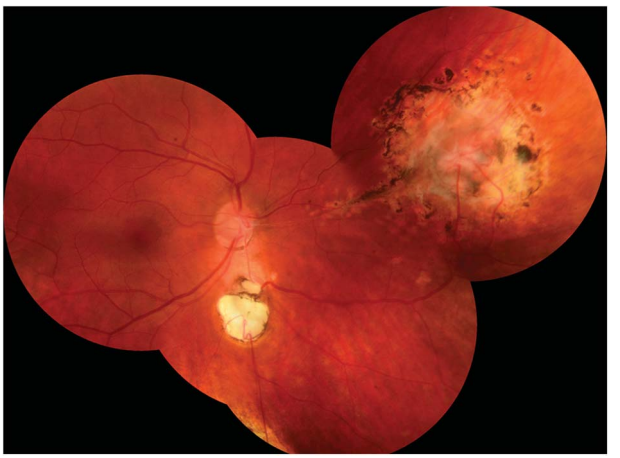

Fig. 5. Color fundus photography. Two years of follow-up. Tumoral lesion exudation was controlled using with argon laser therapy.

hemangioblastoma.[10] In this case, genetic analysis for VHL-gene mutation was negative and there was no family history of hereditary ocular diseases. A connection is possible between large ischemic areas of coloboma and secondary production of increased levels of vascular endothelial growth factor, which could aid in promoting the growth of abnormal vessels as retinal hemangiomas in selected eyes having the genetic loci. However, further genetic studies are necessary to establish a genetic connection between the two conditions.

Chorioretinal coloboma has been reported to be associated with several ocular abnormalities such as iris coloboma, microcornea, nystagmus, strabismus, and microphthalmos. However, there is no previous report of retinal capillary hemangioma associated with bilateral CRH. The coexistence of these two entities highlights the need for careful examination of patients with chorioretinal coloboma. The presence of retinal hemangioma warrants additional investigations such as genetic and systemic tests to rule out VHL disease in addition to a close follow-up to treat the tumoral lesion if needed.

Key words: chorioretinal coloboma, retinal capillary hemangioma, von Hippel–Lindau syndrome.

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