ORIGINAL RESEARCH PAPER
Volume - 13 | Issue - 09 | September - 2024 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

"VASCULAR LOOP AT THE DISC- A RARE CONGENITAL RETINAL VASCULAR MALFORMATION CASE REPORT"

Ophthalomology

A. Nivetha Final Year Post Graduate, Department Of Ophthalmology, Tagore Medical College And Hospital, Chennai.

C. M. Kalavathy Professor And Head Of Department, Department Of Ophthalmology, Tagore Medical College And Hospital, Chennai.

M. Krithika Assistant Professor, Department Of Ophthalmology, Tagore Medical College And Hospital, Chennai.

T. Premsai* Assistant Professor, Department Of Ophthalmology, Tagore Medical College And Hospital, Chennai. *Corresponding Author

R. Srinidhi Final Year Post Graduate, Department Of Ophthalmology, Tagore Medical College And Hospital, Chennai.

ABSTRACT

Prepapillary vascular loop is a rare congenital anomaly which has an elevated and twisted bundle of vessels arising from the optic nerve which is usually of arterial origin. These prepapillary vessel loops are usually asymptomatic and usually detected by a routine Ophthalmological examination as an incidental finding or rarely presents with posterior segment abnormalities. These vascular loops are usually not associated with any systemic conditions. These loops are occasionally associated with complications such as vitreous haemorrhage, occlusion , amarousis fugax. A case report of 11 year old girl with Prepapillary vascular loop as an incidental finding with fundus photograph and B scan images are presented.

KEYWORDS

Congenital Prepapillary loop, vascular loop floating in vitreous, retinal vascular abnormality

INTRODUCTION:

Congenital retinal vascular anomalies include cilioretinal artery, arteriolar arterial crossing, tortuousity, prepapillary loops, aberrant macular arteries, anomalous central retinal artery / vein at the optic disc, pseudo aneurysm of a major ciliary artery. The most common is the presence of cilioretinal artery[1-3] . In 1971, Leibrich was first to describe prepapillary vascular loops as a rare and asymptomatic congenital anomaly[4]. Longest loop recorded was 7.88 mm[1]. They emerge from optic disc and extend into the vitreous cavity as a free floating vascular loop and return back to the optic disc[5,6]. The incidence of prepapillary vascular loop (PVL) is approximately 0.01%. It is usually unilateral, but can be bilateral in 9 to17%[6]. They are classified based on their location around the disc, loop characteristics such as elevation, shape, covering and presence of any vitreo retinal traction[7].They are commonly arterial, rarely venous[1]. Prepapillary loops generally are not associated with any other systemic disorders. Herein we report a rare case presented with a retinal vascular anomaly involving the main branches of central retinal vessels with looped or coiled pattern of intact vessels from the optic disc, with normal vasculature in other areas without any associated congenital or systemic disorders.

Case report:

A 11 year old girl child was brought by her mother to Ophthalmology OPD for routine eye checkup. A detailed history was taken. There was no remarkable present or past ocular or any medical history. Her birth history revealed that she was a full term baby delivered by normal vaginal delivery.

On examination Best corrected visual acquity (BCVA) was 6/6, N6. Colour vision assessed using Ishihara pseudoisochromatic plates revealed 25/25 in both eye.

The anterior segment examination of each eye was unremarkable and Intraocular pressure (IOP) recorded was 12 mm hg with applanation tonometry in both eye. Visual field was within normal limits.

Dilated fundus examination of right eye revealed intact, corkscrew shaped prepapillary vascular loop arising from the centre of the optic disc, extending into the vitreous and free floating in the vitreous. This was identified to be a Type V prepapillary vascular loop as per Mansour et al classification[7]. Optic disc was normal in size, shape and colour with cup disc ratio of 0.3:1.

Rest of the retinal vasculature were within normal limits with artery to vein (A:V) ratio 2:3. Foveal reflex was present and peripheries were normal.

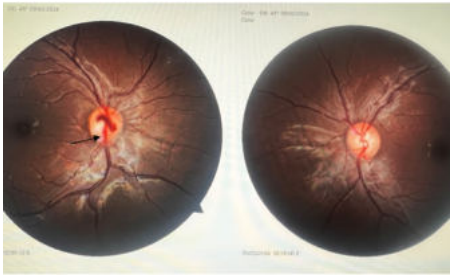

Fig:1 Fundus image of Right eye showing Type V prepapillary vascular loop extending from the optic disc into vitreous. Left eye fundus image within normal limits.

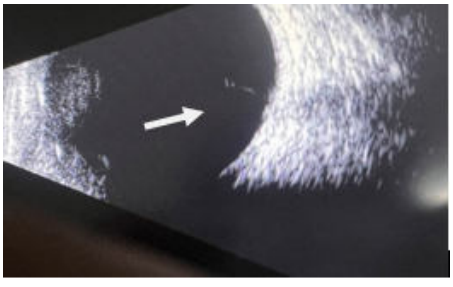

Fig 2: B-scan image of right eye revealing moderate echogenic band extending from optic disc into vitreous.

Dilated fundus examination of left eye was within normal limits. B scan ultrasound of right eye showed the presence of moderate echogenic band extending from optic disc and freely floating in the vitreous for about 5 mm. On kinetic examination the band had little after movements. Optical coherence tomography (OCT) at the level of the optic disc revealed presence of hollow lumen (representing blood vessel) with surrounding glial sheath. Fundus fluorescein angiography (FFA) of right eye showed the loops in arterial origin without any leakage or staining indicating intact vessels. No evidence of vascular occlusions noted.

DISCUSSION :

Prepapillary loops are usually unilateral[2]. Majority of the Prepapillary loops are arterial arising from the retinal arteries[3]. Few cases of Prepapillary venous loops have also been reported. Previously they were considered as remnants of hyaloid artery. But some researchers

with fundus angiography and histological examination have explained that Prepapillary loops originate from branch of either central retinal artery or vein in the disc[14]. There are several known theories for the development of loop such as deficient internal elastic lamina, retinal vascular tortuosity, genetic inheritance which is usually autosomal dominant[15,16] .

Prepapillary loops are previously classified into arterial and venous. The loops can be flat or elongated. There may be single or multiple loops. A case with 6 spiral loops has been reported by Regenbogen and Godel[3]. Mansour et al has classified Prepapillary vascular loops into 6 types. Type 1 has isolated flat loop. Type 2 refers to flat loop with retinal vessel vascularity. Type 3 has flat radial small loops. Type 4 refers to loops extending into vitreous without vascular sheath in form of 8 single or multiple. Type 5 – corkscrew shaped loop free floating in the vitreous. Type 6 – loops associated with vitreous traction[7].

These prepapillary loops act as high pressure with low flow systems, hence the chance of these loops developing a vitreous haemorrhage is very rare. Yet, some of them are associated with complications such as vitreous haemorrhage, subretinal haemorrhage, occlusion of the loops have been reported, amarousis fugax[8-13].

Differential diagnosis of Prepapillary loops include hereditary retinal arterial tortuosity, optocilliary shunts, ciliooptic vein, racemose aneurysms, collaterals following central retinal vein occlusion, acquired loop following central retinal artery occlusion.

CONCLUSION :

Even though, A person is young age, asymptomatic with normal visual acuity and normal fundus in one eye, meticulous examination to be performed to identify a rare case such as congenital PVL. FFA and OCT aid in confirming the diagnosis. Though these vascular anomalies are asymptomatic and benign, considering the rare possibilities of complications, regular follow up of these patients are essential for early detection and treatment for better patient care, quality of vision and life.

Financial disclosure: None
Conflict of interest: No

REFERENCES

1. Mieler, William F. Editor; MIRESKANDARI, KAMIAR FRCSEd, FRCOphth; JANJUA, SADIA; ACLIMANDOS, WAGIH A. FRCS, FRCOphth. Probably the Longest Prepapillary Loop in the World. Retina 21(4):p 393-395, August 2001.
2. Romano PE. Prepapillary vascular loops. Clin Exp Ophthalmol. 2001;29(2):90-91.
3. Regenbogen L, Godel V. Spiral looping of retinal artery. J Pediatr Ophthalmol. 1977;14:117–9.
4. Leibreich R. Demonstration of disease of the eye: persistent hyaloid artery and vein. Trans Pathol Soc London. 2022;22:221-224.
5. Degenhart W, Brown GC, Augsburger JJ, Magargal L. Prepapillary vascular loops. Ophthalmology. 1981;88(11):1126-1131.
6. Hsieh YT, Yang CM. The clinical study of congenital looped/coiled peripapillary retinal vessels. Eye (Lond). 2005 Aug;19(8):906-9. doi: 10.1038/sj.eye.6701691. PMID: 15389271.
7. Mansour AM. Prepapillary vascular loop-a new classification. Eye (Lond). 2021;35(2):425-432.
8. Fujiwara T, Machida S, Herai T, Tazawa Y. Case of subretinal hemorrhage that developed from a prepapillary vascular loop. Jpn J Ophthalmol. 2004;48:175–7.
9. Ish, Somya; Sharma, Deepa; Pathak, Ashok; Verma, Rahul; Garkoti, Himanshu; Kumari, Sudha. Prepapillary vascular loop – A rare cause of vitreous hemorrhage. Indian Journal of Ophthalmology 68(11):p 2497-2499, November 2020. | DOI: 10.4103/ijo.IJO_382_20
10. Brown GC, Magargal L, Augsburger JJ, Shields JA. Preretinal arterial loops and retinal arterial occlusion. Am J Ophthalmol. 1979;8(5):646-651.
11. Zermeno-Arce AJ, Ledesma-Gil G, Moreno-Mendoza R, Graue-Wiechers F. Arterial occlusion associated with a prepapillary vascular loop. Anatomical changes on the long term follow up. Arch Soc Esp Oftalmol (Engl Ed). 2019;94(8):405-408.
12. Bonneric JG, Boissonnot M, rovira jc, dighiero p. Prepapillary arterial loop and retinal arterial branch occlusion. J fr ophtalmol. 2007;30(3):e8.
13. Singh, ravjit md*,†,‡; fujinami, kaoru md*,†,§,¶; moore, anthony t. Ma, frcs, frcophth, fmedsci*,†. Branch retinal artery occlusion secondary to prepapillary arterial loop. Retinal cases & brief reports 8(2):p 124-126, spring 2014. | doi: 10.10.97/icb.
14. Ding pc, chen mt. Peripapillary arterial loop–case report. Kaohsiung j med sci. 1999;15:510–512.
15. Shakin, eric p. Md*; shields, jerry a. Md*; augsburger, james j. Md*; brown, gary c. Md†. Clinicopathologic correlation of a prepapillary vascular loop. Retina 8(1):p 55-58,
16. Lambert hm, sipperley jo, shacklett de. Autosomal dominant preretinal vascular loops. Retina. 1983;3:258–60.