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A RARE CASE OF PERSISTENT HYALOID ARTERY IN A CHILD: CLINICAL INSIGHTS AND IMAGING

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ABSTRACT

Persistent Fetal Vasculature (PFV), formerly known as Persistent Hyperplastic Primary Vitreous (PHPV), is a rare congenital developmental anomaly of the eye caused by incomplete regression of the hyaloid artery system. We report a rare bilateral presentation in an 8-year-old male with a history of premature birth. Diagnosis was confirmed through clinical and imaging findings, and a conservative approach was adopted given the mild presentation.

KEYWORDS: Persistent Fetal Vasculature (PFV), Persistent Hyperplastic Primary Vitreous (PHPV), Hyaloid artery remnant, Bilateral PFV, Posterior PFV, Pediatric ophthalmology, B-scan ultrasonography, Hypermetropia in children, Congenital ocular anomaly, Case report

During normal embryologic development, the hyaloid artery nourishes the developing lens and vitreous. It begins regressing during the third trimester and usually disappears completely by birth. Failure of this regression results in PFV, which can present with various degrees of visual impairment depending on location (anterior, posterior, or combined).

PFV may present unilaterally or bilaterally (less common), with signs ranging from leukocoria to microphthalmia and retinal detachment. (Jones H.E., 1963; Kirschkoff *et al.*)

MATERIALS AND METHODS

Study Design

This is a descriptive single-patient case report conducted at the Department of Ophthalmology, Krishna Vishwa Vidyapeeth, Karad.

Patient Selection

An 8-year-old male presented with complaints of blurred distant vision in both eyes for 1–2 months. History and clinical findings were documented in detail. Written informed consent for examination and use of anonymized data/images was obtained from the patient's guardians.

Clinical Examination

- **Visual Acuity Assessment:** Measured using Snellen's chart for each eye, with and without pinhole.
- **Refraction:** Objective refraction was performed using retinoscopy, followed by subjective refinement.
- **Anterior Segment Examination:** Performed using slit-lamp biomicroscopy to assess for lens clarity, corneal changes, or anterior segment anomalies.
- **Fundus Examination:** Conducted using direct and indirect ophthalmoscopy after pupil dilation, to evaluate the vitreous cavity and retina.

IMAGING INVESTIGATIONS

B-Scan Ultrasonography

- Performed using a standardized 10 MHz probe.
- Images were taken in both eyes to identify vitreous echogenic structures and confirm the presence of hyaloid remnants.
- Clinical photographs and imaging studies were stored in the hospital's database.
- Data was descriptively analyzed and compared with existing literature on Persistent Fetal Vasculature (PFV).

RESULTS AND DISCUSSION

Patient: 8-year-old male

Chief Complaint: Blurred distant vision in both eyes for 1–2 months

Past History

- Premature delivery (exact gestational age not specified)

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- NICU admission for 5 days
- No history of TORCH infections or trauma

Clinical Examination

Visual Acuity

- Both Eyes: Finger counting at more than 3 meters, not improving with pinhole

Refraction

- Right Eye (RE): +6.25 / -1.50 × 135
- Left Eye (LE): +6.25 / -1.25 × 10

Anterior Segment

- Normal in both eyes
- No signs of cataract, posterior synechiae, or microcornea

Fundus Examination

- Remnants of hyaloid artery visible as a white fibrous stalk extending from the optic disc to posterior lens capsule.

Imaging Studies

B-Scan Ultrasonography

- Revealed echogenic band-like structure extending through the vitreous—suggestive of persistent fetal vasculature in both eyes
- No retinal detachment or mass noted

DISCUSSION

PFV is a spectrum disorder ranging from mild persistent vascular remnants to complex anomalies with microphthalmia, cataract, and retinal detachment. This case was a bilateral, mild posterior PFV, a rare presentation. (Figure 1)

Despite hypermetropia, the child had no nystagmus or strabismus, and anterior segment was clear. The remnant vessel did not cause traction or significant media opacity, explaining the preserved eye structure. (Prakhunhungsit and Berrocal, 2020; Ozdemir *et al.*, 2023; BMJ, 2021).

Figure 1: Microphthalmia, Cataract, and Retinal Detachment

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