Dear Editor:

The vascular irrigation of the ocular globe during embryo development is carried out through the embryonic hyaloid artery (EHA)—a branch of the primitive dorsal ophthalmic artery—which, since the tenth week of gestation, progressively regresses and disappears at birth. In complete regression of said EHA gives rise to a number of intraocular structures which usually do not have clinic repercussion but could cause doubts in diagnostics and, in severe cases, lead to intraocular complications.\(^1\)\(^2\)

Complete persistence of the embryonic hyaloid artery after birth is very infrequent. Croquet's canal (CC) or Stilling's duct (SD) is a transparent canal which traverses the vitriol and communicate the lens with the papilla during embryonic development. The rest of this canal or duct in the posterior lens capsule is known as the Mittendorf point and in the papilla, the Bergmeister papilla\(^3\) (BP).

CC was described by the Parisian anatomist Jules-Germain Cloquet\(^4\) (1780–1883), a surgery professor who presented papers on pupil membrane and formation of the small arterial circle of the iris among others. In 1836, he published the Manual of Descriptive Anatomy of the Human Body which included extraordinary anatomic drawings.\(^5\) Subsequently, Jacob Stilling (1842–1915) studied said canal with different stains—such as Berlin blue—to clarify the structure and pathway of the canal in 1869. Born in Kassel (Germany), Stilling was a professor in Strassburg University and focused on studying the Stilling-Türk-Duane syndrome. Martegiani’s space (MS) was described in 1814 by Francesco Martegiani, a professor of medicine and surgery at Naples University. Among other works, Martegiani published the treatise Novae Observationes de Oculo Humano.

The prepapillary section of the CC and MS can be appreciated in Fig. 1 in a nine-year old patient who visited for a routine checkup with absolutely normal results except this casual finding.

Other structures that can be found in the posterior chamber are the Berger space, the Erggelet space or the Wieger ligament (Table 1 and Fig. 2).

Although the persistence of these structures generally has no clinical importance, in severe forms it could be associated with primary vitreous persistence, cataracts of microphthalmas. Exceptionally, EHA can be found in its original structure which traverses the vitreous from the papilla toward the posterior capsule of the lens. It could be vascularized and it could break, producing hemovitreous.\(^1\)\(^2\)

**Fig. 1** – Pre-papillary section of Cloquet's canal and Martegiani's vitreous space inside.

**Fig. 2** – Embryonary remains and intraocular structures. Image provided by courtesy of Cristina Asorey García.

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Table 1 – Intraocular embryonary remains, anatomists who described the structures and chronology.

<table>
<thead>
<tr>
<th>Structure</th>
<th>Embryonary origin</th>
<th>Author</th>
<th>Nationality</th>
<th>Chronology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloquet's Canal</td>
<td>Hyaloid artery</td>
<td>Jules Germain Cloquet</td>
<td>France</td>
<td>1790–1883</td>
</tr>
<tr>
<td>Stilling's duct</td>
<td>Hyaloid artery</td>
<td>Jacob Stilling</td>
<td>Germany</td>
<td>1842–1915</td>
</tr>
<tr>
<td>Mittendorf's dot</td>
<td>Remains of the anterior section of the hyaloid artery in the posterior capsule of the lens</td>
<td>William Frederick Mittendorf</td>
<td>United States of North America</td>
<td>1844–1917</td>
</tr>
<tr>
<td>Wieger's ligament</td>
<td>Circular adherence of the vitreous to the posterior capsule of the lens</td>
<td>Friedrich Wieger</td>
<td>Germany</td>
<td>1821–1885</td>
</tr>
<tr>
<td>Berger's space</td>
<td>Circular space in the posterior capsule of the lens limited by Wieger's ligament</td>
<td>Emil Berger</td>
<td>Austria</td>
<td>1855–1926</td>
</tr>
<tr>
<td>Erggelet's space</td>
<td>Vitreous space in front of Berger's space where the Cloquet canal begins</td>
<td>Heinrich Erggelet</td>
<td>Germany</td>
<td>1883–1969</td>
</tr>
<tr>
<td>Bergmeister's papilla</td>
<td>Remains of the posterior section of the hyaloid artery in the papilla</td>
<td>Otto Bergmeister</td>
<td>Austria</td>
<td>1845–1918</td>
</tr>
<tr>
<td>Martegiani's space</td>
<td>Pre-papillary pictures space where the Cloquet canal begins</td>
<td>Francesco Martegiani</td>
<td>Italy</td>
<td>1780–1860?</td>
</tr>
</tbody>
</table>

Pre-papillary remains of CC or SD and ME, as in the case described above, could produce diagnostic doubts. Differential diagnostic should be performed with myelin fibers, fossae, tumors, optic neuropathy, pseudo-papiledema and even asymmetric papiledema.¹,²

By way of conclusion, may this letter serve to pay homage to Jules-Germain Cloquet, Jacob Stilling and Francesco Martegiani as early ophthalmologists and their respective works, as well as to raise awareness among young ophthalmologists about embryonary EHA remains when in doubt about diagnosing papilla and vitreous with the above-mentioned characteristics.

REFERENCE


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