Myopia affects around 1.6 billion people all over the world. In Spain, its prevalence is estimated to be 20–30%. High myopia (HM) is defined by the existence of a spherical equivalent greater than 6 negative diopters and/or ocular globe axial length over 26.5 mm. It is one of the topics of growing interest in the area of medical retina and constitutes one of the pending tasks for modern ophthalmology. It is the first cause of affiliation to the National Organization of the Blind of Spain (ONCE).

Classically, ophthalmological alterations associated to HM are patchy chorioretinal atrophies, the Förster-Fuchs spot and lacquer striations relative to micro-ruptures in Bruch's membrane. All these signs appear in the funduscopic exploration. It is well known that the difficulty of this exploration in HM patients is due to the peculiar appearance of the chorioretinal tissue.

Spectral domain optical coherence tomography (SD-OCT) has added new pathological alterations previously undetectable with ophthalmoscopy or angiography and which accounts for qualitative and quantitative vision loss in HM patients (Table 1).

However, the new information provided by SD-OCT can be a double-edged sword. On one hand, the extremely pathological appearance of the macula in tomographic images may not match a relatively good visual acuity that is higher than what can be expected, leading to the application of disproportionate therapeutic measures. On the other hand, SD-OCT has made it possible to discover macular changes which go unseen in conventional biomicroscopic funduscopic exploration's and which give rise to unexplainably low visual acuity values, such as myopic macular serous detachments (Fig. 1). These considerations are very important and must be taken into account in the assessment of these patients.

In recent years, new “tomographic” pathologies associated to HM have been described. Thus, particular vitreo-macular traction phenomena (VMT) in eyes with HM give rise to specific pathology. VMT is secondary to two opposite force vectors: the firm adherence of the internal limiting membrane (ILM) and the posterior hyaloids to the vascular structures of the posterior pole, and on the other hand the steep posterior concave curvature of the myopic staphyloma. This gives rise to myopic VMT syndrome1–3 that includes the following possibilities:

- Pure VMT, with the typical tomographic image showing a gull-wing partial detachment of the hyaloid anchored over the fovea. In these cases, visual alterations vary considerably and the approach must be specific to each.
- Complete or incomplete width myopic macular holes (lamellar) which can associate secondary retina detachment (with much greater frequency than in emmetrope eyes) derived from the progression of tangential VMT.4,5
Table 1 – Summary of tomographic findings in high myopia, the symptoms associated to each and individualized therapeutic recommendations.

<table>
<thead>
<tr>
<th>Tomographic finding</th>
<th>Symptoms</th>
<th>Therapeutic approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitreo-macular traction syndrome</td>
<td>Variable metamorphopsia</td>
<td>Observation</td>
</tr>
<tr>
<td>Lamellar macular hole or complete thickness</td>
<td>Variable central vision reduction</td>
<td>Observation</td>
</tr>
<tr>
<td>Retinal vascular microfolds</td>
<td>Variable metamorphopsia</td>
<td>Observation</td>
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<tr>
<td>Myopic foveoschisis</td>
<td>Variable metamorphopsia</td>
<td>Observation</td>
</tr>
<tr>
<td>Peripapillary intra-choroidal cavitation</td>
<td>Asymptomatic</td>
<td>Observation</td>
</tr>
<tr>
<td>Dome-shaped macula</td>
<td>Asymptomatic</td>
<td>Observation</td>
</tr>
<tr>
<td>Macular serous detachment associated to oblique papilla and dome shaped macula</td>
<td>Central vision reduction</td>
<td>Observation</td>
</tr>
</tbody>
</table>

\* The therapeutic approach mainly depends on the degree of functional involvement and not on the structural distortion shown by the tomography.

\(b\) Vitrectomy can be associated to macular indentation procedures.

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Fig. 1 – The spectral domain optical coherence tomography (SD-OCT) can report important macular structural changes even in the absence of significant symptoms. Image A1 is of a 62-year-old woman with a visual acuity of 0.80 in the right eye. The corresponding SD-OCT (A2) shows a vitreo-macular traction syndrome with severe foveal structure alterations. On the other hand, image B1 shows a 35-year-old woman with a visual acuity of 0.40 with several weeks of evolution; here, only the papillary obliqueness calls our attention. The matching SD-OCT (B2) shows a foveal serous detachment with subretinal deposits over the external surface of the photoreceptors layer as a sign of chronicity.
Fig. 2 – (A) Retinal vascular microfolds. The retinography shows tessellation and Perry papillary posterior staphiloma (A1). The vertical section of the SD-OCT defined by the arrows in the retinography show both at the superior level (red arrow tip) the presence of retinal vascular microfolds (A2). A 3D reconstruction evidences said findings referenced over the funduscopic image in the lower parts. This finding is the only cause of the metamorphopsia referred by this 59-year-old patient with a visual acuity of 0.80 (A3). (B) Peripapillary intra-choroidal cavitation. The retinography illustrated a yellowish-orange lesion in close relationship with the peripapillary atrophy, making it easy to confuse it with the latter (A1). The SD-OCT section at the level of the lesion shows the choroidal cavity (A2), which is made evident in the 3D reconstruction (A3). This finding corresponds to a routine revision of an asymptomatic 64-year-old patient with a visual acuity of 1.0. (C) Dome-shaped macula. The retinography shows a marked tessellation with severe peripapillary chorioretinal atrophy (C1). The SD-OCT vertical section centered on the fovea shows the dual macular profile which changes to a cup-shaped configuration in the central region (in the direction of the arrows) is a sort of “inverted staphiloma” (C2). This finding was made in a routine exploration of a 56-year-old patient with diminished central vision and a visual acuity of 0.63. The dome-shaped macula was the only pathological finding of the ophthalmological assessment.

- Retinal vascular microfolds due to traction over the ILM blood vessels and posterior hyaloid.\(^6,7\) (Fig. 2A). Their presence is sufficient to give rise to metamorphopsia.
- Myopic foveoschisis caused by stretching due to the effects of the above described opposite force factors over the macular neurosensory retina.\(^8,9\) Again, visual alterations are very heterogeneous and do not necessarily match the tomographic appearance. They can also associate foveal or macular neurosensory detachments in the absence of retinal holes.

An additional tomographic diagnostic of HM is peripapillary intra-choroidal cavitation (PIC). As the name suggests, the tomographic appearance is that of a vacuum inside the choriocapillary which does not produce significant modifications in the overlying retina.\(^10,11\) It does not exhibit symptoms. The ophthalmoscopic expression of PIC is that of a yellowish-orange flat lesion in the peripapillary area (Fig. 2B). The pathogeny of PIC has not been established. It does not require therapeutic intervention.

Finally, the dome-shaped macula (DM) is a morphological diagnostic based on SD-OCT corresponding to the abnormal convex profile of the macula within the concavity of the HM posterior staphiloma\(^12\) (Fig. 2C). This macular cup-shaped curvature is what gave the name to this entity, appearing as an “inverted staphiloma”. Its mere presence is an independent risk factor with negative visual prognosis for HM patients as it reduces the central vision in the absence of other funduscopic and tomographic signs.\(^13,14\) In addition, in HM cases with oblique papilla discs, DM can be associated to serous macular detachments detectable by SD-OCT, of a chronic or recurring nature.\(^15\) At the angiographic level, the behavior is similar to that of a central serous chorioretinopathy but the retina pigment epithelium alterations match the posterior edge of the staphiloma. There is no treatment for this particular type of macular serous detachment. Photocoagulation over angiographic diffusion areas distant from the fovea have been attempted with variable results.

Accordingly, would it be recommendable to systemati- cally obtain high definition and macular images by means of SD-OCT for all myopic patients in the context of their routine ophthalmological exploration, even in the absence of symptoms? It is an open-ended question but, considering the content of this letter, we believe the answer is positive.
REFERENCES