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Editorial

Microperimetry and its Clinical Applications

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Microperimetry (MP) is a technique that combines for the first time in an instrument the anatomical and functional measurement of retina [1], in other words, allows the visualization of the retina simultaneously to the performance of a perimetry examination. It is possible due to the integration of both viewing and projection systems in a single instrument.

The possibility to know where is located the patient retina is what allow us to correlate the anatomical findings with the functional deficits, but it could not be possible if only movements are detected as in conventional perimetry. It is also necessary to correct them to provide and exact correlation, and it is possible due to recording systems, as the Eye Trackers or Fundus cameras. These will detect the position of the retina from some anatomical feature such as the position of a vessel, or the size of the optic nerve, and, when there is a shift on the position of this image, these will recalculate the new position where the light stimulus must be projected.

Control over fixation losses provides us an indirect measure of the position of the retina and their movements during the development of the exam, and this measure, which initially was used for more reliable perimeter examination, provides us valuable information about subject´s stability of fixation. The stability of fixation will provide information on how stable or unstable is the eye position during the test, but also, depending on the region of retina that use the subject to focus his gaze, named as Preferred Retinal Locus (PRL), we can know if there is a central eye fixation (when the PRL is foveolar) or eccentric (when using another region).

Visual rehabilitation through training of fixation is another innovation that incorporates the MP as a tool. This consists in the use of acoustic signals for re-educate subject's fixation, in the same position of its PRL with the objective of developing its stability, or in another position of the retina with the objective of create a new PRL with better sensory conditions.

All these characteristics have made MP indispensable in the description of macular pathologies or complement their follow-up, showing its usefulness in characterizing also the fixation in pathological subjects, either with the study of stability, fixation patterns, central or eccentric position of the PRLs, or the correlation between fixation and other clinical parameters as the AV, retinal anatomy or the contrast sensitivity. The applications of MP have been described for multiple maculopathies as Age-Related Macular Degeneration (ARMD) [2] or toxic maculopathies [3], but also in other retinal pathologies as Diabetes [4], Macular Hole [5], Central Serous Corioretinopathy (CSC) [6], Glaucoma [7], Stargart [8], Retinosis Pigmentaria [9], Retinal Epimembrane (MER) [10], and others.

Although MP has focused almost exclusively to the study of macular pathology and low vision, in recent years ever more studies are emerging on their application in other fields such as the binocular vision and the oculomotor problems.

The study of retinal sensitivity and fixation, stability and centrality, makes the MP an ideal instrument for the study of sensory and motor disorders as amblyopia [11] or nystagmus [12], not only in the characterization of both conditions, also in a deeper study of them. In that way we found studies about the correlation between retinal sensitivity and fixation with VA, stereopsis or strabismus [13].

So, in addition to the exponential increase in the number of articles published, the scope of the MP is expanding, already not only focuses on low vision and macular pathology, but even to the field of binocular vision and pediatric vision, where there is still much to explore.

Currently, the MP is still very far from replace conventional perimetry in the clinical practice, but if we analyze it, the only reason that exists is the size of the field that us allows explore. The future perspectives of MP are in the way of developing new instruments with more possibilities in the type of stimulus projected on retina, more accurate tracking systems, and why not, bigger areas to explore, not only the central retina. Maybe in the next years we could be talking about "macroperimetry", and conventional perimetry becomes something from the past, but what is sure is that in the coming years it will become an essential instrument in many consultations.

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