

Retinal situation in Colombia.

Carlos Abdala Caballero, MD.

*Oftalmólogo. Cirujano de Retina y Vítreo. Jefe Departamento de Retina
Clínica Unidad Láser del Atlántico, Barranquilla – Colombia
cabdala@unidadlaserdelatlantico.com*

The retina, essential in the visual function of the eyeball, is a light-sensitive neurosensory tissue located on the inner surface of the eyeball. The light that reaches the retina triggers a series of chemical and electrical phenomena that eventually result in nerve impulses that are sent to the brain through the optic nerve. This tissue, which is so important for the development and processing of vision, is not exempt from pathologies that can generate partial or total damage to its structure and which can compromise important areas such as the macula and its central area, the fovea. There is a variety of pathologies that can affect the retina. We will review the most common pathologies due to the characteristics of our population, nutrition, geographical situation and development.

We must remember that retinal pathologies can affect the persons in any age range, among them the most defenseless and with great visual development requirements such as newborns in a premature state. We will begin then with the Retinopathy of Prematurity (ROP), which is the main cause of blindness in childhood worldwide.^{1,2}

Many changes in technology, science and clinical medicine have improved understanding of the pathogenesis of ROP. Technical advances in the ability to regulate the conditions of premature infants have improved the survival of them, even in extreme stages, with the increased risk for the development of this ocular pathology. ROP affects premature infants of low weight and early gestational age who, together with other systemic comorbidities, such as sepsis and oxygen saturation level, are the most important risk factors. The key pathological feature is local ischemia with subsequent retinal neovascularization.³ It has been recognized that ROP differs globally and that there is a need to consider different treatment, screening and detection approaches, depending on the characteristics of the population. The early management of this pathology with laser is of great importance, as well as the intravitreal antiangiogenic therapies directed to reduce the aberrant vasoproliferation and facilitate the physiological retinal vascular development without damaging the visual development of the infant.²

Another important pathology in the routine ophthalmological clinical practice and especially of the retina specialist, is Rhegmatogenous Detachment of the Retina (RDD). RDD is a term we use to describe the separation of the neurosensory retina from the retinal pigment epithelium (RPE) due to a rupture or *rhegma* in the retina, often associated with traction mechanisms and the subsequent vitreous

entry liquefied through the retina. This pathology represents a risk in the general population of 0.8 per 100,000 live people, which rises to between 5.4 - 18.2 in the population over 55 years old. The most important risk factors for the development of RDD are myopia, the history of having undergone surgery for cataract and eye trauma.^{4,5} Its identification and early surgical treatment are essential for a better visual prognosis, which will depend on macular involvement as well as the anatomical component; it is also influenced by the time of evolution of the RDD as well as the complexity of it. For this reason, the education and awareness of the population in the identification of the initial symptoms will allow us to target and improve the prognosis of this disease as well as to perform the surgical treatment in its earliest stages.

The third pathology we will discuss is diabetic retinopathy (DR). DR is one of the most important causes of visual dysfunction in adults during their productive age. The prevalence of DR and secondary visual loss are increasing dramatically. The adequate education and systemic control of diabetic patients, maintaining glucose levels and blood pressure close to normal limits, reduces the risk of DR development and / or progression, which is why multidisciplinary management is essential in these patients. Microvascular damage to the retina due to DR leads to non-capillary retinal perfusion, microaneurysms, intraretinal hemorrhages, nerve fiber layer infarcts, venous abnormalities, and intraretinal microvascular abnormalities (IRMA). In the same way, the increase in vascular permeability characteristic of this disease, leads to retinal thickening (edema) and / or exudates that can lead to a loss in central visual acuity. In the evolution and inappropriate control of the systemic disease, RD can evolve to a proliferative stage, due to the closure of arterioles and venules, with a proliferation of new secondary vessels in the disc, retina, iris and anterior chamber angle. This vasoproliferative state, can lead to tractional RD, vitreous hemorrhage, neovascular glaucoma and secondary blindness.⁶⁻⁸ Among the tools for the treatment in the hands of the retina specialist we have, laser photocoagulation, still one of the pillars in the treatment of DR; Intravitreal injections of anti - VEGF agents, which are very effective in diabetic macular edema, proliferative DR, as well as in the involution of the disease. However, we cannot forget the surgical management, very important and efficient in more severe stages of the disease.⁶

Another pathology that we cannot fail to mention are retinal vein occlusions (RVO), pathology that presents an incidence of 2.3% in the general population. Of this percentage, 78% correspond to Branch retinal vein occlusion (BRVO) and 22 % to central retinal vein occlusions (CRVO). The prognosis of this pathology varies according to the site and degree of occlusion (ischemic or non-ischemic). Macular edema secondary to this pathology is an important cause of visual dysfunction. The proposed treatments for venous occlusions may include the use of laser photocoagulation, corticoids and intravitreal anti - VEGF. The risk factors include medical systemic conditions such as hypertension, diabetes mellitus, lipid and coagulation disorders, for this reason, the importance of detecting and educating the population at risk, as well as the early diagnosis of the pathology are essential to offer better visual health.⁹

Finally, we have Age-Related Macular Degeneration (AMD), one of the main causes of severe and irreversible visual dysfunction in patients older than 65 years, a pathology responsible for 46% of cases of severe visual loss in people over 40 in the USA. The incidence, progression and associated characteristics of AMD increase with age, and likewise, the prevalence of this disease varies with ethnicity. The anatomopathological characteristics of AMD are the presence of drusen, which are cellular deposits of yellowish residues, located at the level of the Bruch membrane, below the RPE and the pigment of the macula. The disease can progress to more severe stages, a severe dry AMD with geographic atrophy, neovascular or wet AMD, stages that have a serious impact on visual acuity and are non-reversible. Although it is estimated that 80% of patients with AMD have a non-neovascular or atrophic AMD, the neovascular form is responsible for almost 90% of the loss of severe visual acuity ($\leq 20 / 200$) due to AMD. The primary risk factors for the development of advanced AMD include increased age, race and genetic factors. Likewise, one of the most important modifiable risks is the cigarette. The use of vitamin antioxidants and mineral supplements identified in the AREDS and AREDS 2 studies should be considered in patients with intermediate or advanced unilateral AMD. In patients with a wet AMD, early detection and timely treatment improves the visual result. Diagnostic tools such as Optical Coherence Tomography (OCT), OCT Angiography and Retinal Fluorescein Angiography are very important in the detection, follow-up and guidance in the treatment of

neovascular activity in AMD. Intravitreal treatment with anti - VEGF agents is the most effective way to manage the wet variety of the disease and represents the first line of management.^{10,11}

So, we have a variety of retinal diseases, which are part of the day to day of eye health in our country, and these can reduce the vision and quality of life of our population. The education, prevention, screening, consultation and treatment with the retina specialist in a timely manner would allow to identify these pathologies in time and provide patients with an adequate opportunity of attention and therefore a better visual prognosis. However, this does not happen. We found many retinal ocular pathologies sometimes undiagnosed or with wrong diagnoses, not attended by qualified personnel, with inadequate referral times to the retina specialist and in many cases only attended in a delayed manner by the them, making their management more difficult, costly and with dubious prognosis.

This mentioned dramatic situation is associated with low education of the communities, poor preparation of professionals, and the lack of use of prevention mechanisms by health insurance companies, which restrict and obstruct referrals to retina specialists and the taking of necessary auxiliary exams and technological procedures for the diagnosis and management of these pathologies. We have a significant deficit in the use of preventive medicine and the current policies of the government and health system are useless in directing and properly managing the body of the iceberg under which all our ophthalmological health problems and especially retinal diseases are found in our country. Finally, it is important as ophthalmologists, to become aware of the reality in which we find ourselves: we have a defective, unequal and selfish health system that offers us, in general, a poor quality of visual health. Only then, we can demand what rightfully belongs to us, a quality visual health that is what every human being and every citizen of our beloved Colombia deserves.

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