Dear Friends,

Greetings from the Editor’s desk.

I am privileged to introduce yet another monthly issue in this diamond jubilee year of our prestigious journal.

This edition gives a fruitful insight into a wide range of subjects ranging from intraocular lenses to vein occlusion and retinal diagnostics.

Diagnostic imaging in chorioretinal disorders include Optical Coherence Tomography (OCT), Autofluorescence imaging (FAF), Fluorescein Angiography (FA), and Indocyanine Green Angiography (ICGA).

FA has been a modality in diagnosis of vitreoretinal disorders since its discovery in 1967 and a new age of retinal diagnostics began in the 1970s. Though it is considered that FFA is the best possible way to image superficial vasculature of the fundus and to identify their perfusion, permeability, and abnormalities; yet, it cannot be used to study the vitreoretinal interface, structural changes of the macula, abnormalities of the Retinal Pigment Epithelium (RPE), and the choroidal circulation.

In this issue Agrawal et al. and his team have vividly evaluated the role of ICGA in evaluation and management of posterior uveitis. Their literature explains the various characteristic patterns of dye perfusion through the different stages of angiography in a variety of etiologies of posterior uveitis.

In 2003, the relevance and clinical value of ICGA in aid of chorioretinal disorders were assessed by an international group reviewing 376 published peer-reviewed studies on the same. The review concluded that there were relatively few specific indications for ICGA.[1]

They strongly recommended ICGA to identify polypoidal choroidal neovascularization (CNV) (polypoidal CNV); document “occult” or type-1 CNV beneath the RPE in age-related macular degeneration (AMD), particularly with a significant vascularized pigment epithelium detachment (PED); and evaluate recurrent CNV.[1]

They also recommended ICGA with some enthusiasm to identify feeder vessels in neovascular AMD; study chronic central serous chorioretinopathy (CSC); and evaluate posterior uveitis for conditions such as multiple evanescent white dot syndrome (MEWDS), acute multifocal placoid pigment epitheliopathy (AMPPE), nonspecific vasculitis, Vogt–Koyanagi–Harada disease (VKH), angiod streaks, and birdshot chorioretinopathy.[1]

They also concluded that ICGA was a well-established technology with a distinct advantage for imaging relatively few chorioretinal diseases, and that it had contributed to our understanding of the pathophysiologic mechanisms in many ocular diseases.[1]

This issue also deals with another useful diagnostic aid in retinal disorders, the spectral domain OCT (SD-OCT). Dr. Y. Ulviye concludes that SD-OCT may be used as an early marker of parafoveal structural changes before the onset of visible fundus changes of hydroxychloroquine (HCQ) toxicity.

High-resolution SD-OCT enables demonstration of structural abnormalities in the retinal layers and correlations with functional status in various retinal diseases, such as epiretinal membranes, macular hole, and retinitis pigmentosa.[2-5]

SD-OCT has been shown to be an excellent marker for early identification of HCQ toxicity.[6]

Radiation therapy for posterior uveal melanoma is associated with the morbid outcome of radiation maculopathy. Studies have demonstrated SD-OCT to be an efficient tool in detecting early vasculopathic changes secondary to radiation maculopathy. This aids in institution of early management resorts that may delay vision loss and salvage functional vision.[7]

SD-OCT has been widely used to assess the thickness of macular ganglion cell complex in glaucoma and early diagnosis of open-angle glaucoma but has recently shown to be useful in evaluating the thickness of ganglion cell complex in high myopes. Recent study demonstrating thinning of macular ganglion cell complex and retinal nerve fiber layer of the optic disc opens new perspective in clinicopathogenesis of higher susceptibility of open-angle glaucoma in high myopic eyes.[8]

The characteristic SD-OCT findings in cone dystrophies may aid in differential diagnosis and be useful for future research on the pathology of cone dystrophy.[9]

It is also proposed that SD-OCT can be used to evaluate the presence of small hyperreflective areas intraretinally, subretinally, and underneath epiretinal membranes in eyes that have had silicone oil tamponade as an indicator of silicon oil emulsification.[10]
Few case reports also reveal that SD HD OCT is more sensitive in detecting subretinal fluid (SRF) and RPE changes even before they could manifest angiographically in CSC. It thus may be a better tool for monitoring the asymptomatic eye for the detection of early changes.[11]

Peripheral OCT imaging is also described to help elucidate clinically ambiguous situations such as retinal breaks, subclinical retinal detachment, retinoschisis, choroidal nevus, and metastasis.[12]

Thus it has proved to be an essential tool not only for early detection, diagnosis, and management indicator, but also as a potential component in further research.

FAF is another noninvasive imaging tool. It is also a preferable modality to follow-up certain retinal disorders, especially concerning the RPE. It facilitates the possibility to image and to topographically map lipofuscin (LF) distribution at the level of RPE. Detection of LF is facilitated by its autofluorescent properties.[13-16]

A hallmark of ageing is the accumulation of LF in the cytoplasm of RPE cells. Excessive accumulation of LF granules in the lysosomal compartment of retinal pigment epithelium cells represents a common downstream pathogenetic pathway in various hereditary and complex retinal diseases including AMD.[17]

RPE atrophy typically appears as a corresponding dark patch in FAF images and can be clearly delineated and are more accurately visualized. Decreased FAF intensities also occur in association with hyperpigmented spots due to the absorption by melanin granules. Hyperpigmented changes may also elicit an increased FAF signal assumed to result from melanolinopofuscin. PEDs with SRF, deposition of extracellular material under the RPE (drusen), or fluid originating from CNV membranes may be characterized by relatively increased, normal, or decreased FAF intensities. These phenomena reflect the molecular constituents, namely, fluorophores other than LF that possess autofluorescent properties in the same spectral range as LF.[18,19]

Similarly it is used to demarcate geographic atrophy, disciform scars and PEDs. It serves as a valuable imaging tool for following up progression of the disease. FAF is also elemental in evaluation of other disorders like CSC, serpiginous and serpiginous-like choroidopathy, macular telangiectasis, idiopathic parafoveal telangiectasis (IPT) type 2, and pharmacologic toxicity.[20]

Thus FAF serves as a predictive marker and a tool for early diagnosis, monitoring of disease progression, and functional correlation.

In a myriad of diagnostic tools with a retinal physician, the function of each subset within the armamentarium must be clearly defined.

It should be widely agreeable by common consensus produced by clinical trials that the best method to study the vitreoretinal interface and structural changes and abnormalities in macula and the RPE is by the use of SD-OCT, the ideal marker of integrity of RPE is FAF imaging and the choroidal circulation is best evaluated with ICGA.[21]

Multimodal imaging is thus the new standard for evaluation of chorioretinal disorders.

As the future of research and therapy unfurls, I hope to see newer imaging and diagnostic tools emerging to resolve the dilemma of vitreoretinal disorders.

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Announcement

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