Prognostic Factors in OCT

Several OCT parameters are associated with decreased VA and different responses to other antiangiogenic treatments regarding VA, central thickness findings, and prognosis after treatment. Singh and colleagues retrospectively analyzed a group of patients with wet AMD treated with bevacizumab (Avastin, Genentech, south San Francisco, CA) and concluded that in addition to VA pretreatment the total retinal thickness measured by OCT affected the final VA and the total decrease in the post-treatment retinal thickness, which was lower in patients who had received previous treatments.[60] Keane and colleagues also found that the main factor associated with decreased VA was the volume of subretinal tissue, and in fewer cases, thickening of the neurosensory retina, without a significant association with the total volume of subretinal fluid and RPE detachment and VA.[61] However, these parameters did not justify the variability found in the VA for similar values of subretinal tissue volume or thickening of the neurosensory retina. The authors pointed to the complex pathophysiology of the neovascular membranes and the limitations of the TD-OCT used to explain the results. Sayanagi and colleagues reported that SD-OCT is a superior generation of TD-OCT than its predecessors for assessing the activity of the neovascular membranes and changes in AMD after ranibizumab treatment, and Kiss and colleagues pointed to the RPE status of neovascular membranes as the main predictor of VA in patients treated with ranibizumab in addition to the conventional parameters such as central retinal thickness.[37-62] Several studies also reported a significant correlation between a hyperreflective band indicating the integrity of the junction between the inner and outer segments of the photoreceptors and higher VA in patients treated with ranibizumab.[63-64] It appears that parallel to the development of new devices, structures assume special importance, such as the junction of the inner and outer segments of the photoreceptors, which until now was only identified, as shown by studies with prototypes with high-definition axial resolution of 3.5 microns as we will discuss later in this chapter.[65-66] Lee and colleagues reported that the presence of posterior vitreomacular adhesion on OCT was associated with CNV in a large series of patients with AMD (n = 251). Those authors suggested that this finding is a possible risk factor for subretinal membrane development because of chronic vitreomacular traction on the retina, opening the door to a possible surgical approach in patients not responding or resistant to drug treatment (Figure 21).[67-68]

Ahlers and colleagues at the Medical University of Vienna led by Ursula Schmidt-Erfurth, MD, pointed to a new parameter as a prognosis factor in patients with AMD, i.e., the optical density ratio of the subretinal fluid detected by OCT.[69] The authors suggested that this ratio may be an indirect way to measure the integrity of the barrier and therefore be useful for differential diagnosis between different exudative macular diseases such as central serous chorioretinopathy and to assess the response to antiangiogenic drugs (Table 4).

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