

Abstract Title: Oxygen, vascular endothelial growth factor and the pathophysiology of ischemic retinopathies and choroidal neovascularization

Results: Pathologic angiogenesis and vascular leakage are hallmarks of ischemic retinopathies (including diabetic retinopathy and retinal vein occlusions) and choroidal neovascularization (in neovascular age-related macular degeneration). Despite recent success in the treatment of these conditions controversy remains regarding the underlying pathophysiology and the particular role of oxygen. On the one hand, there is mounting evidence supporting hypoxic stimulation of vascular endothelial growth factor (VEGF) as a key factor. On the other hand, experimental and clinical observations suggest involvement of inflammatory and biomechanical factors that in turn may occur without hypoxia and VEGF induction. Thus, both hypoxia-dependent and -independent mechanisms are likely acting in concert that may explain the transient and often conflicting effects observed with current anti-VEGF therapies. This presentation will give an overview of the molecular mechanisms of angiogenesis and vascular leakage in ischemic retinopathies and choroidal neovascularization with special emphasis on the roles of oxygen and VEGF.