**Review**

**Inflammatory lipid mediators in ischemic retinopathy**

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**Abstract:**
Ischemic proliferative retinopathy develops in various retinal disorders, including retinal vein occlusion, diabetic retinopathy and retinopathy of prematurity. Ischemic retinopathy remains a common cause of visual impairment and blindness in the industrialized world due to relatively ineffective treatment. Oxygen-induced retinopathy (OIR) is an established model of retinopathy of prematurity associated with vascular cell injury culminating in microvascular degeneration, which precedes an abnormal neovascularization. The retina is a tissue particularly rich in polyunsaturated fatty acids and the ischemic retina becomes highly sensitive to lipid peroxidation initiated by oxygenated free radicals. Retinal tissue responds to physiological and pathophysiological stimuli by the activation of phospholipases and the consequent release from membrane phospholipids of biologically active metabolites. Activation of phospholipase A2 is the first step in the synthesis of two important classes of lipid second messengers, the eicosanoids and a membrane-derived phospholipid mediator platelet-activating factor (PAF). These lipid mediators accumulate in the retina in response to injury and a physiologic role of these metabolites in retinal vasculature remains for the most part to be determined; albeit proposed roles have been suggested for some. The eicosanoids, in particular the prostanooids, thromboxane A2 (TXA2) and PAF are abundantly generated following an oxidant stress and contribute to neurovascular injury. TXA2 and PAF play an important role in the retinal microvascular degeneration of OIR by directly inducing endothelial cell death and potentially could contribute to the pathogenesis of ischemic retinopathies. This review focuses on mechanisms that precede the development of neovascularization, most notably regarding the role of lipid mediators that partake in microvascular degeneration.

**Key words:**
retinopathy, prostanoids, thromboxane, isoprostanes, platelet-activating factors ischemia, nuclear receptors

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**Abbreviations:**