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High myopia: hypoxia as a factor of misbalance between oxidative stress and grow factors

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Abstract

Purpose : High myopia (HM) affects many people worldwide and causes serious eye pathology. Myopic choroidal atrophy can lead to a relative hypoxia of retina. We have performed a study of oxidative stress and grow factors in order to try to asses if the choroids and retinal atrophy lead to a misbalance in these molecules. Our objective has been to determine oxidative stress, VEGF and HGF levels in the aqueous humour of patients with and without myopia.

Methods : Samples of aqueous humour was obtained of eyes that were operated for cataracts in our hospital. Eyes were classify in 3 groups: control group (C) non myopic eyes, group low myopic (LM) with axial length less than 26mm, high myopic (HM) axial length bigger than 26mm. Clinical data including axial length, refractive status and complete ophthalmologic exploration was recorded. VEGF and HGF levels were determined using ELISA kit.

Results : HM eyes present significant differences to the LM and control groups: HGF significantly increased (632.5 ± 201.2 pg/ml) in HM patients ($p < 0.01$), but control (420.1 ± 117.5 pg/ml) and LM group (496.9 ± 158.3 pg/ml) ($p > 0.05$) were not significant. HM also showed significantly reduced levels of VEGF (69.9 ± 37.2 pg/ml) ($p < 0.01$ vs Control group and $p < 0.05$ vs Control and Low Myopia groups). The TAC value presented also significantly inferior values for HM.

Conclusions : Aqueous humour of HM eyes reflects the misbalance of oxidative stress and grow factors that may be related to the diminution of blood flux that happened in HM eyes

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