ACE I and ACE II: immunohistochemical study in primary pterygium

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Pterygium is a common conjunctival disorder exhibiting degenerative and hyperplastic changes as well as proliferative, inflammatory features and a rich vasculature. Epidemiological studies indicate chronic exposure to the sun and most probably ultraviolet B light as an important factor in the development of pterygium. Recent report assumes Renin-angiotensin system (RAS) as a new potential mediator for growth factor and an immunomodulator that influences cell proliferation, apoptosis, tissue fibrosis and participates in inflammatory responses. RAS is classically conceived as a coordinated hormonal cascade in the control of cardiovascular, renal, and adrenal functions, mainly through the actions of Angiotensin II (Ang II), moreover novel studies assume RAS may be involved in the inflammatory process. Ang II is not only a potent vasoconstrictor and a stimulant of the aldosterone release, but also a growth factor and an immunomodulator that influences cell proliferation, apoptosis, and tissue fibrosis, and participates in inflammatory responses in a non-hemodynamic manner. Furthermore, the Ang II enhances vascular endothelial growth factor and contributes to the recruitment of inflammatory cells by inducing chemokines and adhesion molecules. Ang II is generated by enzymatic action of Angiotensin Converting Enzyme (ACE I). Besides the action of Ang II, exists an "alternative" way mediated by Angiotensin-(1-7). Angiotensin-(1-7) [Ang-(1-7)] is an alternative metabolite of the RAS system with actions in opposition to those of Ang II. It is generated by enzymatic action of Angiotensin Converting Enzyme II (ACE II). These evidences may suggest the RAS system such as a double antagonist model: a vasoconstrictor/proliferative role in which the major player is Ang II; and a vasodilator/anti-proliferative role in which the major effector is Ang-(1-7). Due to the relationship among UVB damage, molecular mechanisms of conjunctival cells alterations and pterygium features, ACE I and ACE II were immunohistochemically examined to investigate the possible overexpression, and their relationship, in primary pterygium. The results will be discussed.

Key words
Pterygium, RAS, Angiotensin II, Angiotensin-(1-7), ACE I, ACE II