Oxinitrosative stress, an essential pathogenetic link in ostheoarthritis induced by joint overloading

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Abstract

Osteoarthritis is a degenerative joint disease with many risk factors, one of them being increased joint stress through mechanical overloading.

The physiological loading during joint movements stimulates the condrocyte activity and matrix synthesis. In mechanical stress conditions, both pro-inflammatory interleukins and prostaglandins are synthesized in the cartilage, together with excessive amounts of oxygen and nitrogen reactive species that induce the oxidative/nitrosative stress. A vicious cycle is created between the reactive species and the inflammation mediators through reciprocally induced synthesis, leading to the perpetuation of the pathological process.

The consequences of these phenomena are condrocyte apoptosis and lysis, matrix degradation, and finally arthritic joint lesions.

The counteracting of these events through adequate selection of joint activity, through proper medication or excess weight reduction represents a primordial objective in arthritic disease prevention and therapy.

Keywords: osteoarthritis, oxidative/nitrosative stress, mechanical stress, joint overloading.