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Is fibromyalgia-related oxidative stress implicated in the decline of physical and mental health status?

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Abstract

OBJECTIVES: Fibromyalgia (FM) is a form of non-articular rheumatism characterised by chronic widespread musculoskeletal aching. Although some works have investigated the possible role of oxidative stress in the pathophysiology of FM, none has analysed a significant number of oxidative markers in the same patients. Consequently, we have performed an exhaustive study of the oxidative/antioxidative status in FM patients and healthy controls, as well as the relationship with FM clinical parameters.

METHODS: In 45 female patients and 25 age-matched controls, we investigated the oxidative (lipid and protein peroxidation, and oxidative DNA damage) and antioxidative status (total antioxidant capacity (TAC), and antioxidant enzyme activities and compounds). Functional capacity and musculoskeletal pain were assessed by Fibromyalgia Impact Questionnaire (FIQ) and Visual Analogue Scale (VAS), respectively. The physical (PCS-12) and mental (MCS-12) health status was evaluated by SF-12.

RESULTS: A significant increase in oxidative DNA damage and protein carbonyl content was found in FM patients vs. controls, as well as in antioxidant compounds such as copper and ceruloplasmin. Patients had diminished levels of TAC and zinc. Enzyme activities of superoxide dismutase, glutathione peroxidase, and catalase were lower in FM patients. Significant correlations were observed in patients between oxidative DNA damage and MCS-12, and zinc and PCS-12.

CONCLUSIONS: These findings reveal an imbalance between oxidants and antioxidants in FM patients. The lower antioxidant enzyme activities may lead to oxidative stress through the oxidation of DNA and proteins, which may affect the health status of FM patients.

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