

INVESTIGACIÓN - MEDICINA

EFFECT OF PHOTOBIOMODULATION AND/OR CORTICOSTEROID THERAPY ON CHRONIC LUNG INFLAMMATION IN AN EXPERIMENTAL MODEL OF ASTHMA

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Asthma is characterized by chronic inflammation of the airways. Photobiomodulation therapy (FBM) reduces inflammation, with no side effects. The present study aimed to evaluate the effects of FBM and its combination with corticosteroids (CORT) in an experimental model of ovalbumin-induced chronic pulmonary allergic inflammation (OVA). Balb/C mice were divided into 7 groups: Basal, CORT, FBM, OVA, OVA+CORT, OVA+FBM, OVA+CORT+FBM. Chronic pulmonary allergic inflammation was induced by subcutaneous immunization

(SC) with 4 µg of ovalbumin (OVA), mixed with alum (days 0 and 14), and orotracheal challenge with 10 µg of OVA (three days a week for five weeks). The groups treated with FBM were irradiated for 60 seconds with a 660 nm diode laser, 30mW of mean radiant power and 3 J of radiant energy. In the groups treated with CORT, intranasal fluticasone furoate (0.0275 mg/dose) was used. Twenty-four hours after the last treatment, the analysis of cells and mediators of the bronchoalveolar lavage fluid (BAL) was performed. Regarding the OVA group, both treatments reduced ($p<0.05$) the total number of cells, macrophages, neutrophils, lymphocytes, and eosinophils. With the use of FBM, there was a reduction ($p<0.05$) in the production of IL-4, IL-5, IL-1 β , TNF- α and IL-13, in addition to an increase ($p<0.05$) of IL-10 in BAL in all treated groups, when compared to the OV group. In the OVA + CORT, OVA + FBM and OVA + CORT + FBM groups there was a reduction in collagen deposition, mucus production and tracheal hyper-reactivity compared to the OVA group. Also in the groups in which FBM was applied, there was an improvement in pulmonary function in relation to the OVA and OVA + CORT groups. Thus, we demonstrated that both therapies are efficient, although photobiomodulation alone or associated with conventional treatment has a promising role in the treatment of asthma.

Palavras-chave: asthma; photobiomodulation therapy; pulmonary inflammation; corticosteroids.