

PROTOCOLOS DE INVESTIGACIÓN - ODONTOLOGÍA

IN VIVO EVALUATION OF 5-ALA-MEDIATED PHOTODYNAMIC THERAPY EFFECTS ON LEUKOCYTES IN A MOUSE MODEL OF ORAL SQUAMOUS CELL CARCINOMA

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Oral squamous cell carcinoma (OSCC) is an aggressive and treatment-resistant cancer, characterized by high recurrence and metastasis rates. Photodynamic therapy (PDT) using 5-aminolevulinic acid (5-ALA) has shown potential in various cancer types; however, its specific efficacy for OSCC remains insufficiently explored. PDT with 5-ALA offers a promising alternative to conventional therapies for OSCC, with the potential to enhance treatment efficacy and reduce side effects. However, little is known regarding its in vivo effectiveness in controlling tumor growth and the immune response in OSCC.

Thus, this study aimed to evaluate the effects of 5-ALA-mediated PDT in a murine OSCC model. Forty male C57BL/6 mice were subcutaneously inoculated with the MOC2 cell line. Once tumors reached 100 mm³, animals were randomly assigned to four groups: Control, 5-ALA, Light (DMC Photon Laser, 660 nm, 100 mW, 6 J/cm²), and PDT (incubation with 5-ALA followed by laser irradiation with the parameters described). Tumor growth was assessed three times per week. Seven days after treatment, animals were euthanized, and blood samples were collected for hematological evaluation. Results showed no significant difference in tumor size and total leukocyte count among groups ($p > 0.05$). However, leukocyte profile analysis revealed relevant modulations: the PDT group exhibited a significant reduction in neutrophil percentage compared with the 5-ALA group ($p < 0.01$), suggesting a possible attenuation of the innate inflammatory acute response. Additionally, a significant increase in lymphocyte proportion was observed in PDT group in relation to Control ($p < 0.05$) and Light ($p < 0.01$) groups, indicating activation of the adaptive immune response. No significant differences were found in monocyte levels ($p > 0.05$). These findings suggest that 5-ALA-mediated PDT may act as an immunomodulator, promoting a more specific and potentially effective cellular immune response in OSCC treatment.

Palavras-chave: oral squamous cell carcinoma; photodynamic therapy; tumor growth; immune response.