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Anti-inflammatory effect of topical nanocrystalline silver cream on allergic contact dermatitis in a guinea pig model.

Bhol KC[1], Alroy J, Schechter PJ.

Author information

Abstract

The anti-inflammatory activity of topical nanocrystalline silver cream was assessed and compared with the effects of topical steroids and currently available immunosuppressants using a guinea pig model of allergic contact dermatitis. Dermatitis was induced with dinitrochlorobenzene and treated with different concentrations of nanocrystalline silver, medium and high potency steroids, tacrolimus and pimecrolimus, or appropriate vehicles once daily for 5 days. Erythema was evaluated daily (on a score of 0 to 4, from absent to very severe) and histopathology of the skin biopsies was evaluated after 5 days of treatment. Prior to treatment, the average scores of erythema in all the groups were in the range of 3(+) to 4(+). In the no treatment and vehicles groups these scores remained at about this level for the subsequent 5 days of the study. Nanocrystalline silver reduced erythema within 1 day of treatment in a concentration-dependent manner with significant reduction at silver concentrations of 0.5% and 1% ($P < 0.05$) and this reduction progressed throughout the study period. Steroids and immunosuppressants produced similar decreases in erythema, with no significant differences compared to 0.5% and 1% nanocrystalline silver. In skin biopsies scored for degree of inflammatory response, effects of treatments mirrored erythema results. This study suggests that nanocrystalline silver cream may have therapeutic potential for topical treatment of inflammatory skin diseases.

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