

Topical application of chemotherapy drug may improve appearance of aging skin

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Topical application of the chemotherapy medication fluorouracil appears to reduce potentially precancerous skin patches and improve the appearance of sun-damaged skin, according to a report in the June issue of *Archives of Dermatology*, one of the JAMA/Archives journals.

Fluorouracil stops the body from synthesizing thymine, a building block of DNA, according to background information in the article. This drug is used to treat cancers of the colon, head and neck, pancreas and other organs. In early studies of patients with cancer undergoing treatment with systemic fluorouracil, clinicians noticed changes in skin appearance, which led to the development of a topical therapy for the treatment of actinic keratoses (skin lesions that may develop into skin cancer).

Dana L. Sachs, M.D., of the University of Michigan Medical School, Ann Arbor, and colleagues evaluated molecular and clinical changes in the skin of 21 healthy volunteers with actinic keratoses and sun-damaged skin. Participants applied 5 percent fluorouracil cream to the face twice daily for two weeks; skin biopsies and clinical evaluations were performed at the beginning of the study and periodically throughout treatment. Photographs were also taken at the beginning of the study and after one, two, four, six, 10 and 24 weeks, and were evaluated by three dermatologists who were not involved in examining the patients during the study. Nineteen patients completed all aspects of the study, and 20 responded to a questionnaire at week 10.

The number of actinic keratoses was significantly reduced following treatment, from an average of 11.6 lesions to an average of 1.5. Clinical evaluations also identified overall improvements in aging-related damage, including decreases in fine (small) and course (large) wrinkling, lentigines (dark skin spots), hyperpigmentation (skin that has become darker) and sallowness (a yellow skin tone).

One day after the final fluorouracil treatment, testing of the skin biopsies revealed an increase in the levels of compounds related to skin injury, inflammation and degradation of the extracellular matrix (the non-living tissue that supports skin), in addition to the precursor of collagen, which rebuilds damaged skin. "Topical fluorouracil causes epidermal [outer skin layer] injury, which stimulates wound healing and dermal remodeling resulting in improved appearance," the authors write. "The mechanism of topical fluorouracil in photo-aged skin follows a predictable wound healing pattern of events reminiscent of that seen with laser treatment of photo-aging."

The treatment was generally well tolerated. On the 10-week questionnaire, most patients rated their skin as improved (19, or 95 percent) and were willing to undergo the therapy again (17, or 89 percent).

"For patients in whom a course of topical fluorouracil is indicated for the treatment of actinic keratoses, there will likely be the additional benefit of a restorative effect from sun damage; this may provide further motivation for these patients to undergo the rigorous treatment," the authors conclude. "It is possible that for some patients topical fluorouracil may have an important role against photo-aging. For others, however, it may not be cosmetically acceptable given that a standard course of therapy may last two to three weeks and the ensuing reaction can persist for several more weeks. Undoubtedly, there will be patients who desire a therapy such as topical fluorouracil for cosmetic purposes

given the relatively low cost of this therapy compared with ablative laser resurfacing."

Source: JAMA and Archives Journals ([news](#) : [web](#))

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