RE: Aloe Cream May Increase the Severity of Radiation-induced Skin Reactions in Women Treated for Breast Cancer


Radiation therapy is one of the most commonly used treatments for breast cancer. Treatment can lead to radiation-induced skin reactions at the site of treatment. The radiation site is often treated with metal-free powder to reduce the severity of symptoms. Several studies have tested the effect of aloe vera (Aloe vera, Xanthorrhoeaceae) on radiation-induced skin reactions from radiation therapy, but the results have been inconsistent. In this randomized, double-blind, controlled study, the effect of an aloe vera cream on radiation-induced skin reactions was compared to placebo cream without aloe vera and to a dry powder.

This study was conducted at the Cross Cancer Institute in Edmonton, Alberta, Canada. Women over 18 years of age with non-metastatic breast cancer and a previous mastectomy or segmented resection were included in the study. Patients were excluded if they had uncontrolled diabetes, lupus, AIDS, scleroderma, eating disorders, or a known allergy to aloe vera. Patients received radiation therapy of either 45 Gy in 20 fractions or 50 Gy in 25 fractions. Patients were randomly allocated among the 3 treatment groups of powder only, placebo cream, and cream with aloe vera. The powder group applied non-metallic baby powder or corn (Zea mays, Poaceae) starch to the treatment site for the duration of radiation treatment. In addition, the powder group applied Glaxal Base® cream (WellSpring Pharmaceutical; Sarasota, Florida) 2 times per day for the month following treatment.

Patients in the placebo and aloe vera groups applied 2.5 ml of cream 3 times per day during radiation treatment and for 1 month following treatment. The placebo cream was a blend of Aquatrix® II (Hydromer; Branchburg, New Jersey), Lexemul® 561 emulsifier (Inolex Chemical Co; Philadelphia, Pennsylvania), and several other ingredients commonly used in creams. To create the aloe vera cream, 30 mg of processed aloe
extract prepared from the inside of aloe vera leaves was combined with 100 ml of the placebo cream. The Catterall skin scoring profile (CSSP) was used to quantify each patient's reaction to radiation treatment. A score of 1 signified no visible reaction, while a 10 signified the most severe reaction, ulceration. In addition, patients were asked to rate dryness, itching, burning, and pain at the radiation site on a scale from 0 to 6 (known as a Likert tool). These measurements were made weekly during treatment and then at 1, 2, and 4 weeks after treatment ceased. Data were analyzed with Chi-squared tests, two-tailed t-tests, and univariate and multivariate linear regressions.

The study had a total of 237 patients, with 79 in the powder group, 81 in the aloe vera group, and 77 in the placebo group. The mean of the maximum CSSP score was significantly higher in the placebo and aloe vera groups than in the powder group (P = 0.013 and 0.023, respectively). The aloe vera group also contained the greatest percentage of patients (13.6%) with severe skin reactions (CSSP = 9 or 10) as compared to the placebo group (7.9%) and powder group (3.8%). The powder group tended to have more patients with less severe skin reactions (CSSP = 1-6). For instance, 16.5% of the patients in the powder group experienced skin reactions with a CSSP of 1-4 as compared to 8.6% in the aloe vera group and 6.6% in the placebo group. P values are not provided for these comparisons. There was not a significant difference in dryness, itching, or burning among the treatments. One week after treatment ended, pain levels were higher in the aloe vera and placebo groups than in the powder group (P = 0.016). Regression analysis showed that in those with a body mass index ≥30, chest wall size >40 inches, or bra cup size >A the severity of the skin reaction increased.

Both the aloe vera cream and the placebo cream tended to intensify the severity of skin reactions in patients undergoing radiation treatment; however, neither met the 1-point CSSP score difference in radiation-induced skin reaction severity considered to be clinically significant. The aloe vera cream resulted in a slightly more severe skin reaction than did the placebo cream. The authors hypothesize that the severity of the reaction in the cream treatments may have been due to the mechanical trauma that resulted from application of the cream. The difference in skin reaction among the powder and creams may also have been due to constituents in the vehicle creams or the moistness from the creams. The creams kept the skin moist and possibly made it more prone to infection. This study suggests that aloe vera extract cream does not decrease the inflammation caused by radiation therapy. The authors conclude that patients with breast cancer who receive radiation therapy should treat the radiation sites with dry powder to help reduce the severity of radiation-induced skin reactions.

—Cheryl McCutchan, PhD

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