

# LEAF OF ALOE VERA IN TREATMENT OF ROENTGEN RAY ULCERS

REPORT OF TWO ADDITIONAL CASES

ADOLPH B. LOVEMAN, M.D.

LOUISVILLE, KY.

The treatment of roentgen ray and radium ulcers with the fresh whole leaf of Aloe vera was first described by Collins and Collins<sup>1</sup> in 1935. Wright<sup>2</sup> in 1936 published an additional report on its use, stating that he had obtained gratifying results. The technic of application of both the fresh whole leaf and an ointment containing the intestinal contents of the leaf have been described by these men. Since the publication of these two papers many patients have undoubtedly been treated by this method. For the most part, however, the results are relatively unknown, since cases in which that treatment was used have been reported only by word of mouth or in the transactions of certain societies.<sup>3</sup>

Any one who has seen the horrible suffering endured by patients with some of the late sequelae of roentgen and radium irradiation and who realizes the utter futility of previous methods of treatment will concur that any therapeutic procedure which offers relief from the pain and suffering, let alone cure, is worthy of reporting. It is for this reason that the following two additional cases are described.

## REPORT OF CASES

CASE 1.—C. Z., a man aged 40, first consulted me in August 1935 because of a severe roentgen ray dermatitis involving the backs of both hands. The history revealed that he had received between fifteen and twenty roentgen treatments a year for the past three to five years for an eczematoid dermatitis. The last treatment had been given about six months before he consulted me. Actinic changes were first noticed by the patient approximately a year before he was seen, but

1. Collins, C. E., and Collins, Creston: Roentgen Dermatitis Treated with Fresh Whole Leaf of Aloe Vera, *Am. J. Roentgenol.* **33**:396 (March) 1935.

2. Wright, C. S.: Aloe Vera in the Treatment of Roentgen Ulcers and Telangiectasis, *J. A. M. A.* **106**:1363 (April 18) 1936.

3. (a) Montgomery, Hamilton, in discussion on Rattner, H.: Roentgen Ray Dermatitis with Ulcer, *Arch. Dermat. & Syph.* **33**:593 (March) 1936. (b) Wieder, L. M., in discussion on Rattner, H.: Roentgen Ray Dermatitis with Ulcer, *ibid.* **33**:593 (March) 1936. (c) Daughtridge, A. J.: Aloe Vera in Treatment of X-Ray Ulcer, to be published. (d) Rostenberg, Adolph, in discussion on McLaughlin.<sup>4</sup>

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ulcerations were not observed until from four to six months later. The patient visited the Mayo Clinic in November 1934, where diagnoses of actinic dermatitis and chronic eczematoid dermatitis was made and a biopsy was performed. The histologic section revealed no evidence of malignant degeneration. Examination in August 1935 revealed marked atrophy and telangiectasia of the dorsa of both hands, including the fingers. Numerous keratoses and sclerotic papules were also



Fig. 1 (case 1).—*A*, photograph taken five weeks after treatment with fresh whole leaf of Aloe vera was started. Healing is just commencing. Attention is called to the small ulcer on the mesial side of the little finger, to the exposed tendon in the lower right portion of the large ulcer and to the flexion deformity of the fingers. *B*, photograph taken after the fresh whole leaf of Aloe vera had been used for nearly nine months. The ulcers have completely healed although a few keratoses and sclerotic papules are still present.

noted. There was in addition marked flexion deformity of the fingers of the right hand. In the center of the dorsum of this hand was a deep ulcer the size of a half-dollar with superimposed crusting. This ulcer was sufficiently deep to expose the underlying tendon.

*Treatment and Course.*—Before August 1935 the patient employed various types of local medication, none of which afforded him any relief. He had read about the use of the fresh whole leaf of Aloe vera and had tried it on his own initiative for about two weeks, but no improvement had resulted. Under my supervision the patient received at various times the following therapeutic measures: application of wet dressings of saline solution, boric acid, thioglycerol and cysteine hydrochloride; treatment with various bland and stimulating ointments, including bismuth subnitrate and nearsphenamine; application of adhesive dressings, and superficial cauterization of the edges with the actual cautery. Little improvement was noted as a result of any of these measures.

As the pavaex treatment had been successful in relieving various types of ulcerations of the extremities, it was decided to try it on this patient. He received daily treatment with the pavaex machine from February 11 to February 28, at which time treatment was suspended because of intense local pain and definite progression of the ulceration. These treatments were given for from one to two hours daily. The rate was four cycles per minute, the positive pressure 90 mm. of mercury and the negative pressure 20 mm. of mercury. At the advice of Dr. Oliver Ormsby treatment with the leaf of Aloe vera was again started on March 11, 1936. There was no relief from pain for two and a half weeks. Definite signs of healing were not observed until approximately five weeks after the beginning of this treatment. The fresh whole leaf was used on the large ulcer; ointment was employed on the rest of the hand. The patient continued this treatment until the middle of November 1936. The treatment was interrupted on several occasions because of local irritation and development of verrucous lesions, during which time wet dressings of saline solution and cod liver oil ointment were applied. The patient was last seen on Nov. 17, 1936, at which time the entire ulcer had healed, although there were still a few keratoses and sclerotic areas. The texture of the skin, however, had been markedly improved. At the present time he is using 8 per cent viosterol in a proprietary ointment base. This was recently recommended by McLaughlin.<sup>4</sup>

CASE 2.—W. C., a man aged 46, consulted me for the first time on Jan. 16, 1936, because of a severe dermatitis involving both hands. The history revealed that the condition started two or three years before and that he received from twenty to thirty roentgen treatments during the past year and a half. About a month before consulting me he first noted marked swelling of the hands, with excessive dryness and the appearance of small blood vessels under the skin. Examination revealed an eruption confined for the most part to the hands. The left hand was markedly edematous and presented an underlying erythema, superimposed on which there were numerous vesicles and pustules from the size of a pinhead to that of a pea. On the inner surface of the little finger there was a superficial pea-sized ulceration. Areas of definite atrophy and telangiectasia associated with rather marked dryness and scaliness were scattered throughout the dorsa and palms of both hands. In addition, there was some mild interdigital tinea infection. The impression at the time was that the condition was a roentgen ray dermatitis with a superimposed trichophytid and secondary infection. The patient was hospitalized, and the hands were treated with soaks in bland antiseptics and wet dressings. During the patient's stay in the hospital, in spite of the therapy, the devitalized tissue broke down and numerous ulcerations formed, the largest one

4. McLaughlin, Robert: Roentgen Ray Dermatitis Treated with Ointment Containing Viosterol, Arch. Dermat. & Syph. 34:901 (Nov.) 1936.

being about the size of a dollar. Because of the marked lymphatic edema of the right hand, Dr. Malcolm Thompson, a surgeon, was called in consultation. He suggested the use of the pavaex machine. This therapy was started while the patient was still confined to the hospital and was continued for twelve successive days after he became ambulatory. The technic was much the same as that used in case 1. As in case 1, moreover, this form of treatment had to be discontinued, because of increased pain and definite progression in the size of the ulcers. The patient

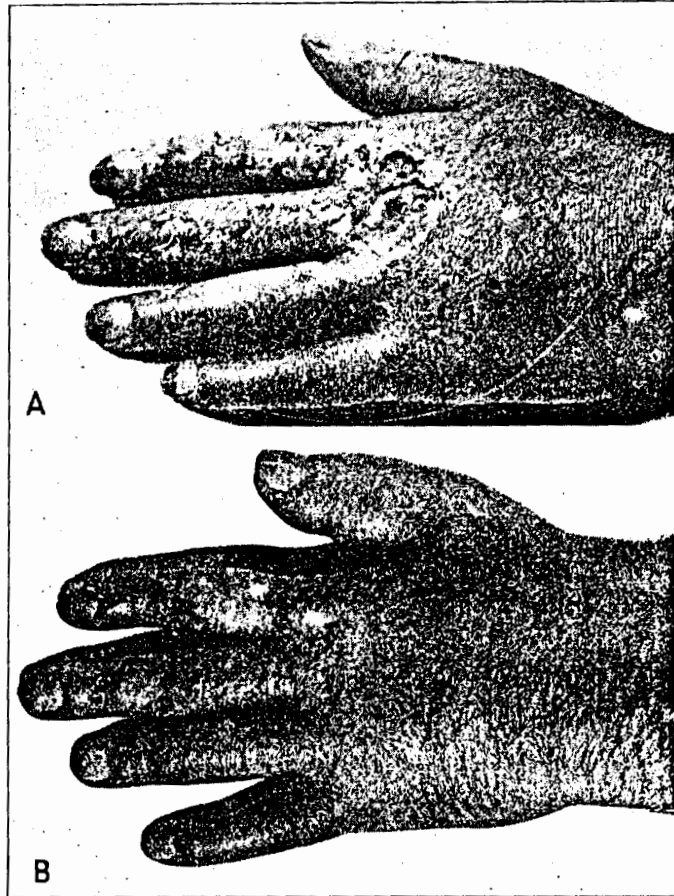


Fig. 2 (case 2).—*A*, photograph taken nearly five weeks after treatment with fresh whole leaf of *Aloe vera* was started. The larger ulcer is only about half its original size, and most of the smaller ones have healed completely. *B*, photograph taken nearly three months after treatment with the fresh whole leaf of *Aloe vera* was begun. Healing is complete. The white areas denote the size of the original ulcers.

suffered pain so severe as to require opiates. Before treatment with *Aloe vera* was started measures similar to those used in case 1 had been employed. No improvement was noted. Treatment with fresh whole leaf of *Aloe vera* was started

on March 3, 1936. The patient was free from most of the pain within from twenty-four to thirty-six hours, and beginning healing was observed in a few days. Healing was complete by May 27, 1936. During the treatment with the fresh whole leaf verrucous lesions developed in this case as in case 1. The patient was last seen on Nov. 17, 1936, at which time the ulcer was still healed. There were still, of course, marked atrophy and telangiectasia.

## COMMENT

There are many interesting features in connection with the two cases reported.

In case 1 there was no relief from pain for two or three weeks after the fresh whole leaf was used. This is somewhat unusual, for as a rule if relief is to be secured it is noted in three or four days. In case 2, although the pain was so severe as to require opiates, it had almost entirely subsided forty-eight hours after the use of the leaf was started.

In case 1 the onset of healing was not noted until the leaf had been used for from five to six weeks. In fact, improvement was so slow that on several occasions I almost discontinued its use. Because there was nothing better to offer the patient, however, this method of therapy was continued. If the ulcer had been in any location other than overlying tendons, its removal with skin grafting would have been recommended. The fact that this ulcer healed after such a slow beginning makes one wonder if most roentgen ray ulcers will not heal if the use of the fresh whole leaf of *Aloe vera* is continued long enough. Apparently the reason for slow healing is that only certain parts of the edge of the ulcer are capable of regenerating epithelium. Consequently, if this area is relatively small in comparison with the size of the ulcer it naturally takes a great deal of time before new epithelium fills in the entire ulcerated area. This was undoubtedly true in this case. Healing proceeded from only one or two areas and not from the entire edge or diffusely from the bottom of the ulcer.

In case 2 beginning epithelization was noted in from forty-eight to seventy-two hours, although the ulcer did not heal completely for nearly three months. An interesting observation in both of the cases was the development of verrucous lesions, apparently a result of stimulation of the epithelium. This has been noted previously.<sup>3a</sup> It was hoped that pavaex treatment would stimulate healing. In both cases, however, it was discontinued because of increase in local pain and definite progression in the size of the ulcerations. No explanation for this is offered except that instead of increasing the local circulation the suction may have destroyed the delicate nerves and capillaries.

In both of these cases the fresh whole leaf of *Aloe vera* was much more efficacious than the ointment, especially when employed on ulcer-

ated areas. The ointment, however, proved fairly satisfactory in the treatment of small erosions, ulcers and keratoses. It also improved the general texture of the skin.

Although the ulcers healed completely, it is still too early to predict whether or not the results are permanent. Neither patient has a normal-appearing or normal-functioning hand. Both present atrophy, scarring, telangiectasia and limitation of motion of some of the involved fingers. The involvement of the fingers was present, however, in case 1 when the patient was first observed. An attempt was made to avoid these sequelae as much as possible in case 2 by insisting that active and passive motion of the fingers be carried out during treatment. Apparently, however, these instructions were not followed conscientiously. It is suggested that if such deformities are to be prevented in the future the patients be made to realize the importance of exercises.

#### SUMMARY AND CONCLUSIONS

Two cases of roentgen ray ulcers are reported in which complete healing followed the use of the fresh whole leaf of Aloe vera.

The duration of the ulcer is important with regard to immediate prognosis. In the two cases under consideration pain disappeared and healing occurred much sooner in the ulcer which had been present the shorter period of time. It is felt that treatment should be continued with the fresh whole leaf for at least from three to nine months before the condition is considered refractory or the treatment is discontinued.

In the two cases reported the fresh whole leaf of Aloe vera proved to be much more efficacious than the ointment in the treatment of the ulcer. The latter, however, was fairly satisfactory in treating some of the smaller keratoses and in improving the general tone and texture of the skin.

In both cases there were marked increase in pain and definite progression in the size of the ulcerations while pavaex treatment was used.