# PRELIMINARY AND SHORT REPORTS

## TREATMENT OF MYCOSIS FUNGOIDES WITH NITROGEN MUSTARD[1]

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Since the report of Gilman and Philips (1) on the therapeutic action of nitrogen mustards, several reports have appeared in the literature concerning the treatment of Hodgkin's disease and related lymphomas with these substances (2–4). Since mycosis fungoides is a cutaneous form of lymphoblastoma, it was decided to test the effect of methyl-bis (B-chloroethyl) amine hydrochloride on a patient with this disease.

### CASE REPORT

Mrs. R. G., a 67 year old white female was first admitted to Cedars of Lebanon Hospital in August, 1945 at which time a skin biopsy revealed the presence of mycosis fungoides. Total body spray radiation with filter was given in divided dosage of 300R, and 800R were given in divided dosage to the areas on the chest which were most extensively involved. Treatment was given from August to October, 1945, with very little improvement. She had been seen in several hospitals in New York City shortly after the onset of her illness eleven years earlier and had been given repeated courses of x-ray therapy with temporary improvement.)

She was then followed in the outpatient department where weekly injections of 1.0 gram of sodium thiosulphate, intravenously, were given for eleven months. This treatment was empirical and resulted in no change in the lesions or pruritus. Diphtheria toxoid was administered empirically in weekly doses of 1 cc by intramuscular injection, for two months, without improvement. On October 31, 1946 she was readmitted to the hospital for further study and treatment.

Physical examination showed the skin of the entire body, with the exception of the face and scalp, to be involved by a generalized papular eruption. The papules were round, elevated 1 to 2 mm., and were 2–3 mm. in size. The entire skin was thickened, brawny-red in color, and showed evidence of recent scratching. Over the right chest posteriorly, and over the right breast, there was an eczematoid, vesicular eruption with some weeping of the lesions (Figs. 1 & 2).

There were a few, small, discrete nodes in both the cervical and inguinal regions. The ankles were edematous, but the pitting was slight.

The rest of the physical examination revealed nothing abnormal.

Urinalysis, red count, hemoglobin, sedimentation rate, Kline, NPN, and uric acid determinations were normal. The white blood count was 8,200, with 67% polys, 3% eosinophiles, 21% lymphocytes, and 9% monocytes. The serum albumin was 3.0 gm.%, and the serum globulin was 3.5 gm.%. The A/G ratio was 0.9.

An x-ray of the chest and an electrocardiogram were within normal limits.

Smears of sternal marrow showed a slight increase of eosinophiles and eosinophilic myelocytes.

A biopsy of skin was reported as follows: "Section of the skin reveals moderate acanthosis. The epithelium in places is atrophic and an occasional small ulcer is seen. There is

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FIG. 1. Photograph of back taken on November 7, prior to treatment, showing the papular eruption and thickened, brawny skin.

FIG. 2. Photograph of legs taken on November 7, prior to treatment

slight parakeratosis of the surface. The superficial portion of the corium and papillae shows a striking infiltration by cells which vary considerably in size and shape. Many of the cells are plasma cells. There are also a number of lymphocytes. In addition, there can be seen large mononuclear cells with abundant cytoplasm and large vesicular nuclei. There are many dilated capillaries with prominent endothelial cells. Diagnosis: Mycosis fungoides" (Fig. 3).

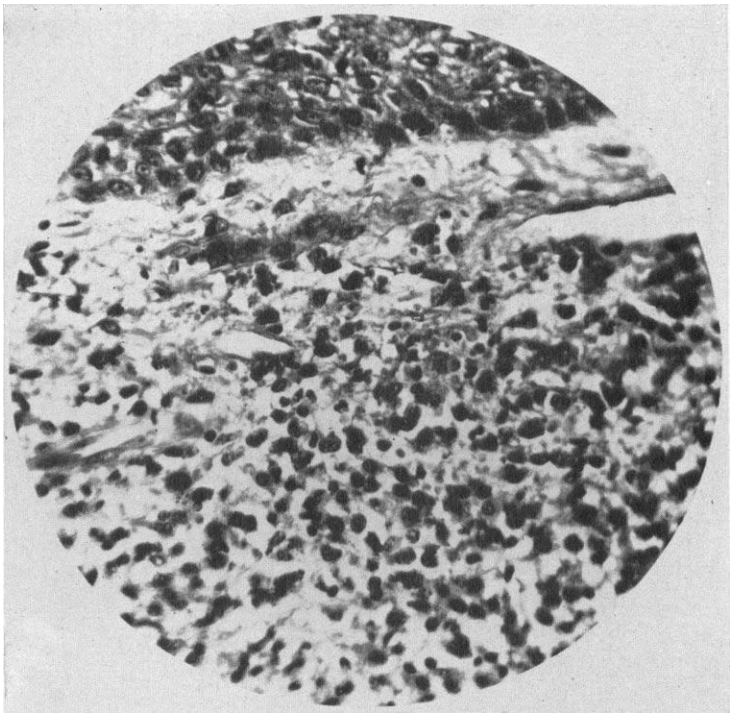

FIG. 3. Photomicrograph of skin biopsy taken on November 7, prior to treatment, showing dense infiltration of corium by plasma cells, lymphocytes, and mononuclear cells.

TREATMENT AND COURSE

On November 11, 1946, the patient was given 5.0 mgm. of methyl-bis (B-chloroethyl) amine hydrochloride. The drug, dissolved in 5 cc. of distilled water, was injected into the tubing of an infusion of normal saline. The same dose was repeated on November 12 and on November 13. A total of 15 mgm. was used.

The white count fluctuated from 5,400 on November 11, to 4,000 on November 19. The differential count remained essentially normal throughout the entire treatment period. The red cell count, the hemoglobin, and the platelet count did not change.

There was a prompt response to therapy, and the papules, patches of infiltration, and pruritus began to disappear by the fourth day after treatment was started. At the end of a week, the skin of the entire body appeared normal except for the vesicular lesions of the right breast and right chest posteriorly (Figs. 4 and 5). These lesions now assumed a more typically herpetic character, and are shown in the photographs.

A second biopsy of skin was taken on the ninth day after treatment was started, immediately adjacent to the area shown in figure 3. The pathological report is as follows: "The section shows epithelium of average thickness with slight keratinization. There are

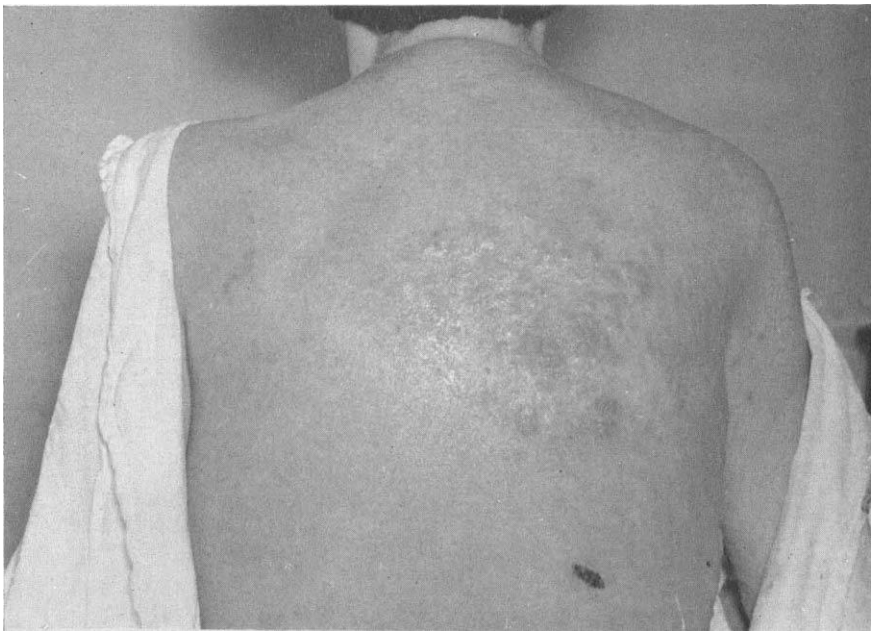

FIG. 4. Photograph of back taken on November 27, sixteen days after treatment was started, showing marked clearing of the skin. The herpetic lesion of the right chest is also shown.

FIG. 5. Photograph of legs taken on November 27

a moderate number of dilated capillaries in the superficial corium and papillae. A number of pigmented chromatophores are seen. There are a small number of lymphocytes and mononuclear cells located perivascularly. The intense infiltrate of the earlier sections is gone. Diagnosis: Chronic dermatitis, slight" (Fig. 6).

One month after therapy, the herpetic lesions have almost entirely disappeared.

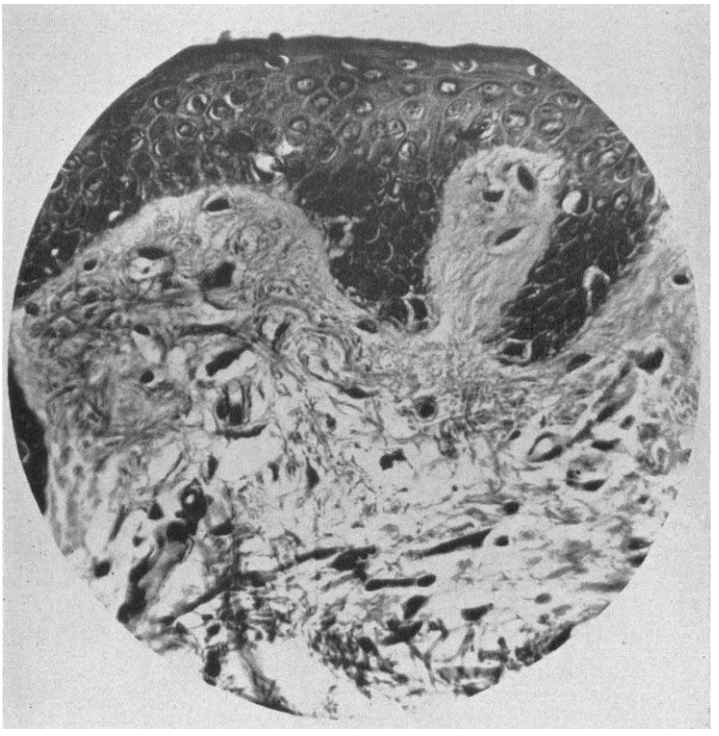

FIG. 6. Photomicrograph of biopsy of skin taken on November 20, nine days after treatment was started, showing disappearance of the intense infiltrate of the earlier section.

SUMMARY

1. A preliminary report of the successful treatment of a resistant case of mycosis fungoides with nitrogen mustard is presented.

2. A prompt disappearance of the mycotic lesions was observed within one week after treatment was started. No recurrence has been observed at the end of a month.

3. A later report of this case will be forthcoming along with reports of other cases now under treatment.[4]

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[4] *Editor's note:* Drs. Henstell and Tober's forthcoming reports are awaited with interest. In our material several cases of mycosis fungoides have benefitted strikingly but only very temporarily from treatment with nitrogen mustard. It is hoped that modification of the compounds and methods may achieve more durable benefits.

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