

A CASE OF BLASTOMYCETIC DERMATITIS
OF THE LEG.

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I am greatly indebted to Prof. J. B. Murphy and Dr. W. E. Coates for allowing me to use the clinical history of, and the material from, the following case of blastomycetic infection of the skin of the leg.

Clinical History.—Mrs. W., aged 64, married, with an uneventful family and personal history, was admitted into Professor Murphy's clinic, Nov, 10, 1897, on account of a lesion on the right leg, of which she gave the following account: Four months previously a small pimple appeared of itself, on the posterior surface of the lower third of the right leg; three or four days later a second pimple sprang up; both seemed to contain clear fluid. Gradually the two fused into one larger mass, which slowly enlarged. After one month the swelling was opened by a doctor and a bloody fluid escaped, after which it slowly "dried up." In a few weeks it reopened and ulcers would form, heal up, and appear again, the swelling slowly increasing. When she appeared in Professor Murphy's clinic there was a circular, elevated, cauliflower mass, as large as a silver dollar, with an irregularly ulcerated and red surface. The growth was regarded as probably carcinomatous and removed by a circular incision running 2 cm. outside of its margins, the subcutaneous fat and superficial fascia being dis-

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sected away continuously with the diseased tissue. The defect was covered by a plastic operation. Primary union followed. The subsequent history is not known.

Description of Gross Specimen.—The part removed was mounted in glycerin-jelly and placed in the museum of the College of Physicians and Surgeons. It now—March 26, 1899—presents the following appearances (Fig. 1): There is an ovoid raised area, 4 by 5 cm. in the principal diameters, surrounded by a strip of healthy-looking skin from 1 to 2 cm. wide, the under surface being composed of yellow subcutaneous fat. The central area is quite evenly and abruptly raised above the level of the surrounding skin to the extent of about .5 cm., its margin round, the sides partly covered by epidermis, the surface marked by larger and smaller elevations and depressions and deeper furrows, which give the surface somewhat of a cauliflower appearance; the surface is yellowish in color, showing also several reddish spots which in some places correspond to superficial erosions. On section the raised part seems to be made up of a rather homogeneous, now yellowish tissue which is quite sharply and evenly demarcated from the subcutaneous fat tissue on a level with the corium of the surrounding healthy skin.

Histologic Examination.—The tissue was fixed in formalin and alcohol, imbedded in paraffin, and stained with hematoxylin and eosin, polychrome methylene blue, etc.

The sections include part of the elevation of the skin and underlying tissues; at its highest point the elevation rises .5 cm. above the level of the healthy skin present near one edge of the sections. The larger part of the nodule and the adjacent skin from which the nodule rises gradually are covered by a moderately thickened epithelial layer, the horny stratum of which is rather coarse and thicker than usual; part of the elevation is without any normal epithelial covering and presents irregular, somewhat crater-shaped depressions; the margins of the ulcers and the immediately adjacent sur-

faces are composed of irregular masses of epithelial cells and intervening elevations which contain inflammatory tissue, necrotic debris, leucocytes and fragments of horny matter. The elevation is due principally to a marked epithelial hyperplasia in the form of irregular, branching bands and masses, as well as separate nests the centers of which are generally more or less hornified. In many places these epithelial proliferations consist largely of typical prickle cells.

The histologic resemblance to flat-celled carcinoma is often marked (Fig. 2). This proliferation appears to

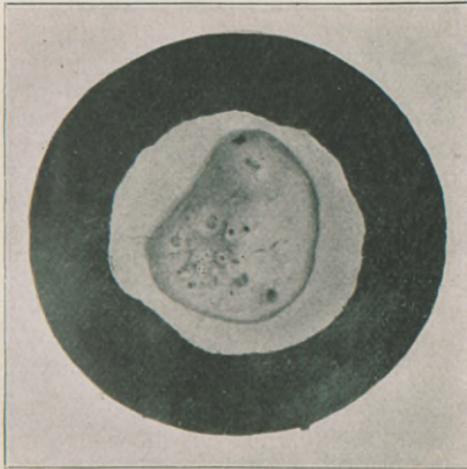


Fig. 1.—Photograph of blastomycetic lesion of the skin of the leg. One-third natural size.

have started from the epithelium about the crater-shaped ulcers, and to have progressed downward as well as laterally, without having become united with the overlying intact epidermis, the thickening of which is largely due to polypoid downgrowths of the interpapillary portions. Between the epithelial masses and bands is a very vascular and cellular connective tissue the seat of a marked leucocytic and other cell infiltration; in some places there are more focal accumulations of leucocytes constituting miliary abscesses. Similar miliary ab-

scesses occur also in the centers of masses of epithelial cells. The size of these abscesses varies greatly; they are usually round or irregularly oval, and in the case of the intra-epithelial abscesses the surrounding epithelial layers are usually composed of greatly flattened cells. Scattered polymorphonuclear leucocytes occur also within and between the epithelial cells. There is also considerable cellular infiltration of the fibrous tissue below and to the sides of the epithelial proliferation; the deep margins of the sections are formed by normal fat tissue.



Fig. 2.—Showing epithelial proliferations, superficial ulcers and miliary abscesses. 60.*

Examined with higher powers, the miliary abscesses are found to in some instances contain one or two typical, doubly contoured blastomycetes, with granular and occasionally vacuolated protoplasm. (Fig. 3.) The organisms are round, about 12 microns in diameter; distinct budding forms are present; some of the bodies contain one or more vacuoles of irregular size and outline. Iso-

* Figs. 2 and 3 were used in the British Jour. of Derm., 1899, No. 129, Vol. xi.

lated organisms have also been found outside of the typical miliary abscesses, lying in the granulation tissue and usually surrounded by a few polymorphonuclear leucocytes, which seem to be gathering around the blastomyces. Some of the organisms are stained very distinctly in the methylene blue specimens.

In addition to the densely packed polymorphonuclear leucocytes, the miliary abscesses also contain cells with oval, more vesicular nuclei and occasional multinuclear giant cells of the tuberculous type. Some of the giant cells contain quite typical organisms.



Fig. 3.—Double-contoured, vacuolated, budding blastomyces in a miliary abscess. X 750.

The inflammatory tissue between the epithelial masses and in the corium proper and the subcutaneous tissue contains quite large accumulations of, as well as scattered, typical plasma cells, which in their reaction to methylene blue as well as in all other details correspond to the classic type of this cell; in the hematoxylin sections the finely granular protoplasm of the plasma cell stains a light bluish tinge. New-formed vessels in which are lymphocytes, plasma cells and polymorphonuclear

leucocytes are present; some of these cells are seen passing through the vessel walls. In some vessels the lumen is packed with lymphocytes only. There are also not a few eosinophile cells, both within and outside the vessels, a few large cells with vesicular nuclei and a cyanophile, granular protoplasm which the polychrome methylene blue stain seems to show are mast-cells, and, finally, occasional multinuclear giant cells of the tuberculous type. Tubercle bacilli are not present in the sections stained with carbol-fuchsin.

Not a few karyokinetic figures are seen in the cells of the granulation tissue, and occasional circular groups of hyaline spheres are also present.

This case has already been considered in an article by Hyde, Hektoen and Bevan.¹ The case merits special notice because the clinical resemblance of the growth to carcinoma and its histologic resemblance on the one hand to carcinoma and on the other to tuberculosis emphasize well the importance and also the difficulty of the diagnosis of chronic blastomycosis of the skin. The clinical aspects of blastomycetic dermatitis have been fully considered by Hyde in the article just mentioned. I wish to emphasize the histologic characteristics of the forms of chronic cutaneous blastomycosis of which the above case is a good example. The marked epithelial proliferation in the form of carcinomatoid masses and downgrowths, associated with the formation of embryonal cells in the stroma, with giant cells and much leucocytic infiltration, diffuse as well as focal, in the form of miliary abscesses between as well as within the epithelial masses, constitute the characteristic histologic picture of this form of mycosis, the blastomycetic nature of which is definitely established by finding the characteristic, double-contoured, budding, yeast-like organisms in the lesions, usually in the miliary abscesses. In these respects the cases of Gilchrist and Stokes, Wells, Hyde, Hektoen and Bevan, and of Owens, Eisendrath and Ready², the above case and two unpublished cases, the specimens from which were kindly shown me by Dr. W. E. Coates and Dr. M. Herzog—a courtesy for which I

am very thankful—resemble each other completely, and they constitute a quite well-defined clinical and histologic group which is easily separated from the distinctively suppurating and destructive form of blastomycosis as illustrated by Busse's case, the dermatologic features of which have been especially studied by Buschke,³ and by the case briefly described by Hessler.⁴ And yet it appears not unlikely that the cases of chronic blastomycetic dermatitis such as the one now reported may be produced by organisms which differ so much in their characteristics that they must be regarded as distinct varieties. Thus the blastomyces dermatitidis described by Gilchrist and Stokes differs considerably from the organism in a blastomycetic dermatitis which I studied.⁵ But the classification and the botanic relations of the so-called blastomycetes are as yet in a rather unsettled condition. While the histologic structures of chronic cutaneous blastomycosis resemble in some ways carcinoma to such an extent that errors might easily be committed in microscopic diagnosis—a fact of considerable interest in connection with recent efforts to demonstrate that carcinoma and sarcoma are caused by yeast, or other fungi—yet none of the cases of blastomycetic dermatitis so far described have pursued the clinical course characteristic of carcinoma to the extent that regional or general carcinomatous metastases have been noted. The possibility that a genuine carcinoma may originate in the lesions of cutaneous blastomycosis is of course apparently no more remote than the development of carcinoma upon the basis of cutaneous tuberculosis. The cases of blastomycetic dermatitis are as yet too few and the periods of observation too short to make many dogmatic statements. Thus nothing definite can as yet be said concerning the mode of infection, except that from its usual localizations it appears to occur from without. I have made a number of experiments on animals, with the organism isolated from the case under the care of Drs. Hyde and Bevan, looking to the production of a primary cutaneous process, but so far without success.

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