XANTHOMA DIABETICORUM.

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There being only a dozen cases of xanthoma diabeticorum on record, an additional case is still of interest. As Mr. Malcolm Morris is also relating another case in the present number of this Journal, and has gone fully into the history of the affection with which his name is honourably associated, it would be superfluous on my part to do more than relate the case, to describe the histological details according to my investigations, and to make such remarks as appear to me to arise from my observations.

Clinical History.—The patient, æt. 30, was sent to me for diagnosis by Dr. Duncan Greig on February 25th, 1891. The eruption dated from the previous Christmas. It began on the buttocks, next appeared on the front of the arm, and then on the elbows and knees, and the lesions had since gradually increased in number. On the buttocks, where the eruption was most developed, the papules varied from a millet-seed to a pea in size, and had a slightly reddish tinge, unless the skin was stretched, when a yellow colour came out. There were no telangiectases on the papules, and there was not a distinctly red base with a yellow apex, such as is often seen in these cases. On the elbows, the whole papule was more distinctly yellow than on the buttocks, but was of a much paler shade than that usual in ordinary xanthoma. The patient was a well-nourished, but not obese, healthy-looking man. Recognising, however, that the eruption was that of xanthoma diabeticorum, I closely questioned him, and he then admitted that for the last nine months he had noticed a difference in his health; that there was some lassitude, that he was more easily done up, and that his spirits were not so good as they used to be. On testing the urine, sugar was at once detected; and subsequent examination showed that he passed 3¼ pints of urine in the twenty-four hours, and that it contained 18 grains to the ounce. There was

no albumen, and his other organs were sound. He was put on a modified diabetic diet, and the sugar rapidly disappeared. On April 4th there was only a faint trace of sugar, and the nodules on the buttocks were less prominent, and his general health had improved.

He was kind enough to allow me to have a drawing made of the buttocks, and to excise a papule the size of a hempseed on the extensor aspect of the right fore-arm.

Histology.—The excised nodule was placed in a solution consisting of equal parts of alcohol and one-sixth per cent. of chromic acid in distilled water, a solution which answers well for most specimens of skin. The sections subsequently made, were overstained with hæmatoxylin, and the excess of colour washed out with a ten per cent.

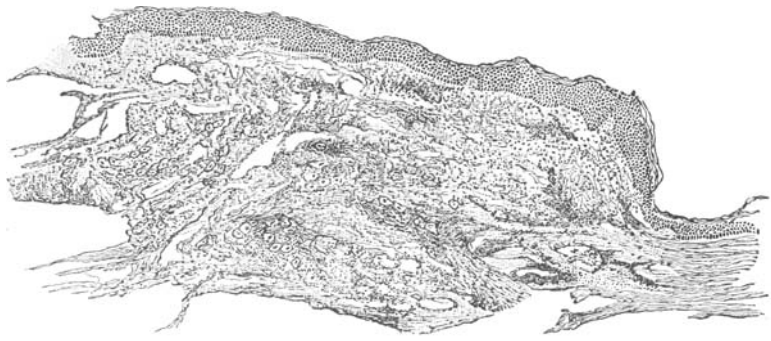

FIG. 1.—Xanthoma diabeticorum. General view, showing that the diseased portion extends from the rete Malpighii through the whole depth of the corium, and that it consists of a round cell infiltration with small groups of epithelioid cells scattered throughout. (× 1-in. Ross.)

solution of acetic acid, a plan which I have found very successful for demonstrating the structure of ordinary xanthoma.

Epidermis.—There was very slight thickening of the rete Malpighii, the lowest cells showing slight signs of proliferation; in other respects, this and the other layers of the epidermis appeared normal. The chief changes which produced the nodule affected the papillary layer, and the upper half of the deep layers of the corium, most marked immediately below the papillary plexus. With an ordinary lens the outline of the nodule could be seen to be fairly well defined below, pushing up the epidermis above, thus forming a lenticular mass in the papillary layer and upper half of the corium. Under the

microscope, changes in and around the vessels beyond the mass showed that the process was extending. Within the lenticular area indicated, the chief part of the process was an infiltration of oval or spindle-shaped cells between the connective tissue bundles of the corium, breaking them up into smaller bundles; naturally, therefore, the arrangement is chiefly in a horizontal direction, but as the infiltration is also most marked round the vessels, bands of these cells, which are evidently nearly all exudation-cells, also ran at irregular intervals in a more or less vertical direction.

Besides these exudation cells, careful examination showed that there were other epithelioid cells of various shapes and sizes, but for the most part oval, roundish, and a few angular from compression. They contained one, two or more nuclei, were arranged in small irregular loose groups, with a tendency to form lines of four or more horizontally or at various angles. The foci were small, few in number, and at different levels below the horizontal vessels of the papillary plexus, some being deep into the corium, but most in the upper part of the deep layer.

The arrangement of these epithelioid cells in some of the sections pointed to their being in some way connected with the blood-vessels or their lymphatic sheaths, but what the exact connection was, the limited amount of material at my disposal did not afford me the opportunity of determining. The coil glands below the nodule showed infiltration of leucocytes between the coils, and proliferation of the lining cells. The blood-vessels beyond the main mass were ensheathed in round cells for a considerable distance, and were notably dilated throughout the diseased area.

On comparing the anatomy of this and of an ordinary xanthoma planum from the eyelids, the difference was so obvious and striking as to seem at first sight due to a totally different process. In the first place the morbid condition as a whole is deeper in xanthoma planum. The cell masses are large, conspicuous, and very numerous, displacing and replacing the connective tissue fibres, which form thin walled *loculi containing* the densely arranged giant-cells of which the mass is almost entirely composed, while inflammatory phenomena such as exudation-cells are absent or very scanty.

Most of the cells, which are very conspicuous, are much larger and contain more nuclei than those of xanthoma diabeticorum, which

require to be carefully looked for and focussed in order to detect their outline. The giant-cells, in short, are much more highly developed and numerous in planum.

When comparison is made with a nodule of xanthoma tuberosum of the same size as that of the xanthoma diabeticorum under consideration, the differences are less distinct. Here, as in xanthoma diabeticorum, the changes are more superficial, and form a similar circumscribed, well-defined mass. The infiltration-cells are more abundant, and the giant-cells less so than in xanthoma planum, while, on the other hand, the infiltration-cells are much less abundant and the giant-cells much more abundant than in xanthoma diabeticorum. The giant-cell structure constitutes the greater part of the morbid area, but the outlines of each are obscured by their close aggregation, and they form, therefore, more definite groups. None

FIG. 2.—A small portion of fig. 1 more highly magnified to show the epithelioid cells, some of them multi-nucleated or giant cells. (× ¼-in. Ross.)

of the individual cells are so large as many of those of xanthoma planum. The increase of the rete is somewhat marked, and there is very slight downgrowth, which was not present in xanthoma diabeticorum.

In spite of these differences, both the clinical and microscopical features point to the morbid changes being due to the same kind of process, but differing in degree.

At one end of the chain the advanced form of xanthoma planum, made up almost entirely of giant-cells, with scarcely any signs of inflammation, suggest a neoplasm, as, indeed, Touton considers it; while at the other end is xanthoma diabeticorum, with abundant

evidence of inflammation, and only slight development of the characteristic cells. Xanthoma tuberosum, when in small nodules, with its moderate inflammatory signs, and, as compared with planum, moderate giant-cell development, forms the connecting link. The clinical course is in accordance with the histology. Involution, as far as I know, has never occurred in xanthoma planum of eyelids. It has occurred, but very rarely and very slowly, in xanthoma tuberosum; while involution is the rule, and that often very rapidly, in xanthoma diabeticorum.

Doubtless in larger lesions than the one examined the xanthoma-cells would be more abundant and crowded; indeed, Robinson has described such a growth, and says the surrounding tissue is infiltrated

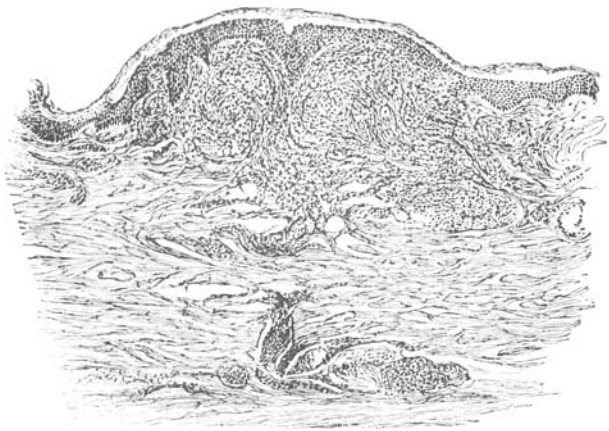

FIG. 3.—A small nodule of xanthoma tuberosum for comparison, showing the diseased area extending quite up to the rete, pushing it up; almost the whole area consisting of epithelioid cells. The lower portion of the corium is almost free from disease. (× 1-in. Ross.)

with these cells in proportion to the size of the nodule. I did not observe "the patches of degenerated disintegrated tissue" that he describes; perhaps this is a phenomenon indicative of commencing involution. My specimens did not show a hair-follicle as the centre of the process, but one of the sections showed a sweat-duct traversing the very centre of the papule. Probably, though it often is so, the lesion is not necessarily in connection with one of these appendages, though all the sweat-coils in my sections were involved more or less. Another minor difference between my observations and his is, that he

describes the process, as a whole, as lying somewhat deeper than the main portion was in my specimen. These slight differences are not of importance, and, on the whole, our observations agree fairly well; but he had the advantage of more material for his examination.

I must leave the reader to compare Clarke's observations on Malcolm Morris's case, as I have not read them, though I heard the description he gave at the Pathological Society.

There can, I think, be no question that the process is an inflammatory one, and it is only reasonable to infer that in spite of the neoplastic aspect of xanthoma planum in its highest development, it is also due to an inflammatory process, as Chambard long ago asserted and Touton disputed. While, therefore, it is interesting from the light it throws on the pathology of ordinary xanthoma, it is clinically important as a guide to, it may be, a wholly unsuspected glycosuria, and considerably widens our conception of the origin, course, and development of xanthoma as we had previously known it.