ON THE DEVELOPMENT
OF A
LAYER OF ELASTIC FIBRES
IN
DUCT CANCER OF THE BREAST.
BY
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I SUBMITTED to the Society during the last session a paper which dealt with histological changes found in several cases of cancer of the breast. In connection with one of these cases a new formation, of what I termed “an elastic substance composed of a fine fibrillar element,” around some masses of cancerous epithelium was described. Since that paper was read I have continued my examination of this substance, and have now to bring before the Society a short summary of the results of a more mature study of its nature and significance.

Although a scanty development of this layer is not unfrequently observed in tumours of the kind with which my previous paper dealt, I have not found in any which I have examined the formation to so large an extent as in the tumour in connection with which my first study of this substance was made. It is, therefore, on data

supplied by a further examination of the same tumour that the following conclusions have been arrived at :

The tumour referred to is an example of the growth to which Waldeyer has given the name of fibro-carcinoma cysticum mammæ, and which I have described as duct cancer.

The new formation is not present in all the epithelial masses, and is found most developed in those which are situated in the central and deeper parts of the tumour. This "elastic substance" is simply a layer of minute elastic fibres which surrounds the cancerous epithelium, and from which it is separated by a *membrana propria*. It is absolutely free from admixture with white fibrous tissue, often attains considerable thickness, and when examined under a low magnifying power is seen to be sharply demarcated from the fibrous tissue on its outer side. Under a high power the minute elastic fibres can sometimes be seen to be continuous with elastic fibres in the surrounding tissue. It contains leucocytes and a few capillary blood-vessels.

All the elastic fibres composing it are minute, and they interlace in different directions.

So far as I am aware the existence of a similar layer of elastic fibres has not been previously described. In the present instance it was well brought out by the characteristic effects of picric acid and eosin.

Its significance seems to me to be as follows :

Henle has described an elastic layer as surrounding the large lactiferous ducts—a layer which appropriate staining makes very conspicuous. It is impossible not to associate the development of Henle's layer around the ducts with the development of the duct epithelium. Tumours like that in which I found the elastic layer largely developed as a new formation, have been traced by Waldeyer and others (and I can confirm the observation) to an epithelial growth which originates in the ducts; and the inference follows that there is an intimate connection between the growth of epithelial masses of duct origin and

the formation of the new layer of elastic fibres ; that there is a repetition in the cancerous growth of an impetus to the formation of elastic tissue similar to that which produces the elastic layer of Henle ; and that in both instances there is a connection, which is yet unexplained, between the growth of a columnar epithelium and a growth of elastic tissue.

The membrana propria, surrounding some, but not all, of the cancerous masses, was found chiefly around the large ones. It was nucleated and occasionally a double line of nuclei, one on each side of the membrane, was observed. This membrana propria was of new formation, and its mode of distribution in this tumour illustrates the misleading nature of the proposal to make its presence or absence the criterion of a growth in any given instance being a so-called adenoma or a cancer.

DESCRIPTION OF PLATE IV.

Development of a Layer of Elastic Fibres in Duct Cancer of the Breast. (Geo. Thin, M.D.)

FIG. 1. $\times 30$. *a*, white fibrous tissue; *b*, layer of elastic tissue; *c*, cancerous epithelium; *d*, portions of the elastic layer shaved off the borders of the cancer-masses in making the sections.

FIG. 2. $\times 500$. *a*, white fibrous tissue; *b*, layer of elastic fibres; *c*, membrana propria; *d*, cancerous epithelium.

FIG. 3. $\times 500$. (A and B show different parts of a large portion of the membrana propria which was isolated as an accident of the preparation. The part A is continuous in the preparation with B, but in the drawing an intervening portion is left out.)

- A. *a*, nucleus of the membrana propria; *b*, membrana propria; *c*, nucleus on the outer side of the membrana propria; *d*, elastic fibres, portion of a large elastic layer from which the membrana propria has been partly detached.
- B. *a*, membrana propria; *b*, cancerous epithelium.

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