not advocate neglect of other measures, for instance, any drug indicated by constitutional conditions which may concur, and daily baths to prevent relapses, for a healthy skin resists the invasion of any parasite, and a dietary composed largely of vegetable foods, the husk of the cereals being excluded, for in this way we could limit supplies for the keratin which is so excessively produced in psoriasis.

ON A FORM OF HYALINE DEGENERATION.

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Of late years the use of aniline stains for ordinary and pathological histology has gradually been growing in favour, and more especially is this the case where it is necessary to determine microscopically in a tissue the existence of a certain degenerative condition, for instance, the so-called amyloid change. Aniline stains have, however, certain grave disadvantages, inasmuch as they cannot be held, for all ordinary purposes, to be as certain in their effects as the older carmine and hæmatoxylin preparations. Their power of selection is not sufficiently definite, and hence their use has come to be somewhat restricted to special conditions and where it is desired to bring out certain bodies, which possess the power of retaining such stains beyond those of the surrounding tissues. To the bacteriologist they are invaluable, because one can stain with their aid micro-organisms deeply, and, by the use of alcoholic or other solvents, discharge it more or less entirely from the tissue elements, of which latter, the nuclei of cells seem to have a greater retaining power than the cell elements themselves. Owing to the fact, however, that such stains frequently stain degenerating particles in a more marked way than other stains do, those, whose lines of work do not ordinarily demand the use of such methods, are liable to be frequently puzzled by the pictures presented to their eye of tissues so stained frequently showing smaller or larger stained points. It is in this connection that I propose to detail the form, character, and, so far as I have been able to discover, the mode of production of certain peculiar masses to which Dr. Russell has applied the name of "fuch sine bodies." These are brought to view in certain tissues when stained with carbol-fuch sine, and seem to be of a hyaline nature, and have no relation whatever with fungi.

This form of hyaline degeneration occurs in certain specific inflammations as tubercle, syphilis, rhinoscleroma, etc., and also in certain new growths, and more particularly in those which are somewhat rapid in their formation. Of the latter, one finds in it lymphosarcoma, in scirrhus, and in epithelioma. It may also be present in others, but I have not, so far, had the opportunity of studying them in this connection. I shall speak of it as affecting: 1. The protoplasm of modified connective tissue cells; 2. the nuclei of such cells; 3. the protoplasm of cells of epithelial type; 4. the nuclei of such cells; 5. intercellular material.

The stain which I have made use of is that recommended by Dr. Russell, and is used as follows: First, a saturated solution of fuch sine in a 2 per cent. aqueous solution of pure carbolic acid. This stain is best made by heating the carbolic solution slightly, so as to dissolve a full amount of fuch sine, and when this has become quite cold, so that the excess of fuch sine has crystallised out, it may be filtered, and is then ready for use. Secondly, a 1 per cent. solution of iodine green in a 2 per cent. aqueous solution of carbolic acid. This is used as a contrast stain which stains the undegenerated tissue elements. The method of use is to take the sections from water to the carbol-fuch sine, in which they are allowed to remain for ten minutes, when they are to be washed for a few minutes in water, then transferred to absolute alcohol for half a minute, and then placed in the iodine green solution for five minutes. From this they are then taken and rapidly dehydrated in absolute alcohol, cleared in clove oil, and then mounted in Canada balsam.

In the case of scirrhus cancer, so stained, one will find that

the healthy cells and their nuclei are delicately stained with iodine green, but very numerous cells will be found to have begun to degenerate, and others will be found in a very advanced condition of disintegrative change. All points of degeneration take on a fuch sine staining—very brilliantly in the case of the advanced, less so in the more recent, while in the case of nuclei, which are only taking on the change, it may be found that their staining is by a mixture of both the stains used. The onset of the condition evidently is irregular in its order of production; in many cases the nucleus is the first to undergo this change, and in such conditions the cell will be found to contain a spherical, or nearly spherical, body, whose nature at first it is difficult to reconcile with that simply of a degenerated nucleus, but a careful study will demonstrate its mode of formation from such a source so clearly that all doubt as to its true nature will soon be set aside.

Fig. VIII.—A cell from scirrhus cancer in which degeneration is far advanced, and in which hyaline grains are seen.

Fig. IX.—A cell in the early stage of degeneration in which the nucleus has been first affected.

Fig. X.—A cell in a very advanced stage of degeneration.

In some cases the change overtakes a nucleus when in active division and when it consists, for the most part, of a mass of chromatic nuclear fibres. In such a case one can trace the onset of the change in these fibres, as the portions degenerated take on the fuch sine stain. In connection with this latter condition one may find, scattered here and there throughout the tissue of a scirrhus cancer, bundles of faggot-like bodies, which at first glance look like bundles of bacilli. Their nature, as the broken-up chromatic fibres of a nucleus, can, however, be easily made out with a good lens. The occurrence of degeneration of the protoplasm in the cell presents some peculiar features. As the change progresses, the nucleus may take on a definitely spherical form, or it may undergo a pathological segmentation, whereby a considerable number of smaller bodies are scattered throughout the cell, which take on a brilliant fuch sine stain. Such bodies in this situation are not, however, always derived from the nucleus, but may be deposited within the cell by degeneration of its own protoplasm. In other cases the cell is evidently filled with semifluid contents, amongst which numerous spherical globules of this hyaline material may be found. These masses, wherever found, vary considerably in size, in some cases occurring in large masses which have long been familiar objects to bacteriologists, while in in other cases they are of small size. Of the nuclei, the chromatic filaments of epithelial and endothelioid cells seem to withstand the degenerative process longest. In the case of epitheliomata, we find the degeneration manifesting itself in two distinct conditions. First, that in which we find one or more small masses included within a cell; and secondly, that in which we find foci or clusters of very beautiful spheres which stain brilliantly of a pink colour. These two conditions are independent of each other, and the latter is peculiar to epithelial tissues.

In such a tumour one finds modified connective tissue cells undergoing changes which as a rule start in the nucleus, but not constantly so, while in the case of cells possessing epithelioid characters the nucleus, as has been said, seems to withstand for some little time. The appearances so far presented in such a tumour are quite analogous to what has been spoken of as occurring in scirrhus cancer. The appearance of foci

is not at first sight, however, so easy to understand, as may be seen from Figs. I and II; but a careful study shows that

Fig. I.

Fig. II.

Fig. I.—A group of so-called fuchsine bodies among healthy cells.
Fig. II.—A smaller group of the same showing their relation to the cells in which they have been deposited.

epithelial cells which are found in or near cell nests, or in which the cell is modified after that of those found in the cornified layer take on a different form of change. In this case it is the cell as a whole which degenerates, and as a result of this we may find, by examination with a low power, very numerous instances of cells which are stained much more deeply than those around. As the change progresses here, we find that a sort of shrivelling takes place, so that the normal outline of the cell is lost, and a mass of hyaline material is left. This mass at a later period breaks up into smaller masses, and these subsequently undergo a sort of slow liquefaction preparatory to their removal from the tissue; and

Fig. III.

Fig. III.—A mass of epithelium which has undergone hyaline change: nuclei may be seen, one healthy, while the others are in different stages of change.

during this process they give rise, by their breaking up, to groups of brightly stained bodies, almost, if not absolutely, spherical.

Fig. IV.—Epithelial cell becoming hyaline, its nucleus degenerated and with a healthy nucleus lying above it.

Fig. V.—A mass of hyaline material which is now in process of breaking up into spherules.

Fig. VI.—Another mass in which the process is still better seen.

Fig. VII.—A cell in which hyaline grains are being deposited, and of which the nucleus has remained so far healthy.

In Fig. VI it may be seen that a degenerated mass is breaking up into almost regular hexagonal units, and this method of breaking up seems to be the starting point for the formation of foci of spherical bodies, of which the size are for the most part regular in each group. The spheres in the different foci,

however, show very great variation in size, some being very small in one group, while in another the individual units may be three or four times as large. In the case of rapidly growing lymphosarcomata, in addition to the appearance of hyaline nuclei within the cells, we may find great strands or masses of hyaline material scattered throughout the tissue, whose nature as arising from particular cells or intercellular stroma it is difficult to demonstrate. In some cases one may find vessels filled up with such a material, and in the broken up after-condition one may see appearances like a string of spherical bodies placed in a line. The drawings which illustrate these conditions have been very carefully made by Mr. Murray, and are most faithful reproductions of the appearances produced by them.

In conclusion, a word may be said as to the method of staining. This cannot be held as absolutely certain to define accurately the degenerated nuclei. The process is one whereby the whole tissue is first deeply stained with carbol-fuchsine, then partially decolorised by absolute alcohol, and subsequently stained by iodine green. If, therefore, the tissue is left too long in the alcohol it may be found afterwards only to show iodine green staining. There can be no doubt that carbol-fuchsine has the power to a certain extent of resisting the replacing action of the iodine green in nuclei, which are degenerated, and better still in the fuchsine bodies; but if the fuchsine is first of all almost entirely removed, one can find that nuclei, which otherwise would have retained the latter stain, are stained now by the iodine green. Thus it is evident that this stain can only show the presence of hyaline degeneration of this kind, but cannot be held as definitely showing either where the process begins or ceases.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

PELVIC CELLULITIS: INCISION: RECOVERY: SUBSEQUENT PREGNANCY.

READ in the light of Dr. Cullingworth's recent paper on "The Differential Diagnosis of Pelvic Inflammations in the Female,"¹ the following case of pelvic cellulitis, going on to abscess formation, requiring operative interference, and resulting in a perfect recovery and subsequent pregnancy, is of some interest:—

Mrs. C., aged 31, was admitted to Cumnock Cottage Hospital on December 18th, 1888. On October 8th she had been delivered of her seventh child, after a labour of only two-and-a-quarter hours' duration, and before the arrival of her doctor. Three-quarters of an hour afterwards the placenta was removed manually. On the third day she had rigors; the discharge had almost ceased, and what little discharge there was was offensive. Although feeling far from well, she attempted to rise on the sixth day, but she had to return to bed and remain there.

On admission she complained of "weakness" and of "pains in the right side." She was very thin and anæmic. Her lips were pale, her tongue furred, her bowels loose, and her pulse almost imperceptible. She had no cough, and her urine was normal.

Vaginal examination revealed a resistance in the right lateral fornix, which a bimanual examination showed to be due to a thickening and induration of the base of the right broad lateral ligament.

On January 20th, 1889, the following note was made:—In the right iliac fossa can be felt a swelling about the size of a hen's egg—hard, and painful to touch. Percussion gives a dull note over the swelling, which measures 3 inches parallel to Poupart's ligament, and extends 2 inches above it. *Per vaginam*, the anterior, the posterior, and the left lateral fornices are empty, but in the right fornix there is a distinct bulging—hard and tender, but without fluctuation.

On February 1st the swelling had slightly increased in size, and fluctuation was detected.

¹ BRITISH MEDICAL JOURNAL, December 27th, 1890.