HISTOGENESIS OF SCIRRHUS CARCINOMA OF THE HUMAN BREAST

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During cultivation of a scirrhus carcinoma of the human breast in diffusion chambers territorial separation of the epithelial and connective tissues is observed. The epithelial cells are driven to the periphery of the filter where they form follicular structures. Connective tissue cells occupy the central part of the filter, where they actively divide (20-25 mitoses per thousand cells) and, at the same time, produce many fibers.

Tumors of the breast of the scirrhus carcinoma type still give rise to differences of opinion among oncologists [1, 4, 5]. The very dense fibrous tissue of these tumors contains so few cells and so many collagen and elastin fibers that it is often difficult to analyze the histogenesis of tumors of this type.

The investigation described below was devoted to an elucidation of this problem.

EXPERIMENTAL METHOD

Growth of the tissue of a scirrhus carcinoma of the human breast was studied in diffusion chambers. The great advantage of this method is the ability of the tissues to differentiate during cultivation in the chamber, so that the method can be used to study the histogenesis of the tissues. Material sent for pathological analysis after radical mastectomy was used for cultivation in the diffusion chambers. The pieces of tumor were washed in a solution of antibiotics and small fragments (about 0.5 mm^3) were placed in diffusion chambers.

The diffusion chambers were implanted intraperitoneally in rats or golden hamsters. One tumor was usually transplanted simultaneously into ten to 15 chambers. Altogether four tumors, diagnosed as scirrhus carcinoma, were studied in this way. The animals were sacrificed 3, 7, and 14 days after transplantation of the tumor. The filters were fixed with alcohol–formol and total preparations were stained with Carazzi's hematoxylin.

EXPERIMENTAL RESULTS

Migration of the cells from the primary fragment of tumor tissue was apparent as early as on the 3rd day. As a rule the epithelial cells migrated in groups, forming complexes with each other (Fig. 1a). Connective-tissue cells migrated separately from the epithelial cells and grew in no particular order (Fig. 1b). After cultivation for 7 and 14 days, further separation of the two tissues took place. The epithelial cells were forced to the periphery of the filter where they formed layers with a characteristic arrangement of cells resembling follicles (Fig. 2a). Mitoses were often seen (7-10 per thousand cells). The connective-tissue cells occupied the center of the filter, where they produced large numbers of fibers (Fig. 2b). However, they also divided intensively at the same time: 20-25 mitoses were counted in 1000 cells.

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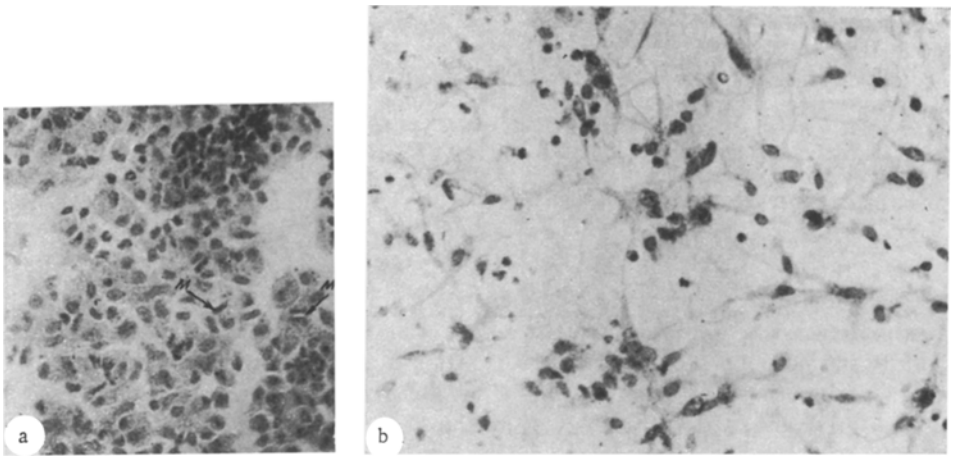

Fig. 1. Tissue of scirrhus carcinoma of the human breast on 3rd day of cultivation in a diffusion chamber: a) area epithelial cells; b) area of connective-tissue cells. Total preparation, Carazzi's hematoxylin, 160×.

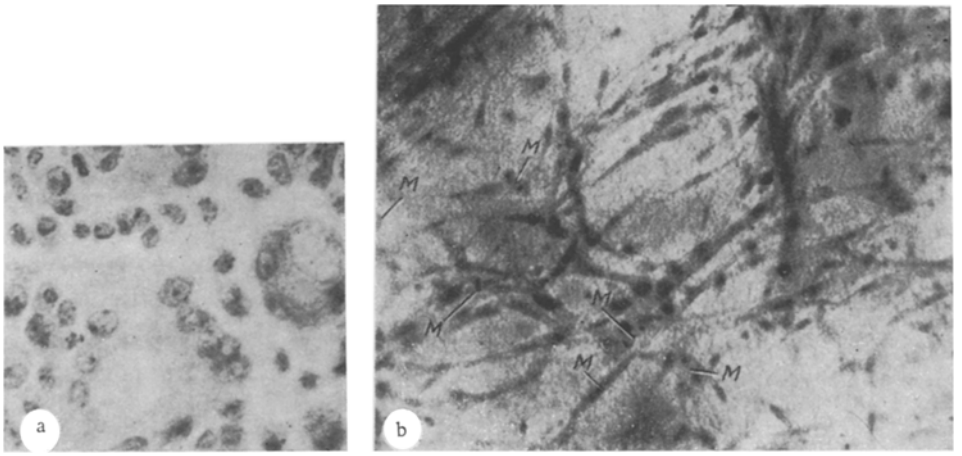

Fig. 2. Scirrhus carcinoma after cultivation for 14 days: a) peripheral part of transplant – differentiation of epithelial cells; b) central part of transplant – connective-tissue cells. M) mitoses. Total preparation, Carazzi's hematoxylin, magnification: a) 240×, b) 160×.

During cultivation of a scirrhus carcinoma of the human breast in diffusion chambers territorial separation of the epithelial and connective tissues thus takes place, and the rate of growth of both types of tissue is high.

The writer has previously shown that the behavior of connective-tissue cells of the stroma during cultivation of carcinomas of the stomach, lung, and ovary and adenocarcinoma of the breast is completely different [2, 3]. In those cases these cells are found only at the early period of cultivation and they are arranged directly among the epithelial cells. No mitoses are observed among them, and in the late periods of cultivation the connective-tissue cells disappear completely.

LITERATURE CITED

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