SYNOVIOMA OF THE HAND

REPORT OF A CASE

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Tumors of the synovial tissues of joints, tendon sheaths and bursae are uncommon, and published reports of such tumors are few. Several authors, however, as Lejars and Rubens-Duval (1), Smith (2), and King (3), have noted distinctive features in these tumors, connected apparently with the nature of the tissue of origin.

The names given tumors of this type by various writers (1), such as "endothelioma synoviale," and "synovial sarco-endothelioma," reflect a belief, no longer held by anatomists (Maximow, 4), that synovial membrane is endothelial in nature, and serve to place these tumors in a very uncertain category. The term "synovioma" has been applied by Smith (2) and is used by others (King, 3; Knox, 5), as indicative of the tissue of origin. The synovial membrane is derived from connective tissue, the cells of which possess a dual potentiality, becoming by development either supportive or lining cells. The cells of a synovial tumor may exhibit varying degrees of functional differentiation, forming organoid structures resembling synovia. The source and mode of formation of the synovial fluid are not definitely known, but the experimental work of Vaubel (6) with tissue cultures supports the theory that it is produced by the living synovial cells. In some of the cases on record, and in the case here reported, a viscid mucinous fluid resembling synovial fluid has been found within the tumor.

In most of the reported cases the tumors have been malignant, although a few (7) have been apparently benign. The following case is reported because of its well marked organoid growth tendencies, and as an example of a benign form of synovioma.

CASE REPORT

The patient was a white man, thirty-six years of age, a railroad machinist. Three years before surgical removal of the tumor, he had received a crushing injury to the soft tissues between the thumb and forefinger of the right hand. Following this injury a painless subcutaneous mass appeared on the palmar aspect of the web of the thumb. The growth slowly increased in size and in time began to interfere with the use of the hand. Surgical removal of the tumor was readily accomplished. It was found to be encapsulated, and was not connected with the joint. There has been no recurrence within six months.

Description of the Tumor: The specimen was received after fixation in 10 per cent formalin. It is a firm, spheroidal mass measuring 2.5 cm. in diameter, enclosed in a thin fibrous capsule. It cuts readily and is relatively inelastic as compared to fibrous tissue. The surfaces produced by cutting are solid, gray-white, with a few small scattered brownish areas. They neither bulge nor retract. A small quantity of clear mucoid fluid exudes from them.
Microscopically, the tumor is seen to be composed for the most part of fusiform cells which are neither typically fibroblastic nor epithelial. The cells vary greatly in size and shape, and in their structural relationships. In general, the mass is made up of many small solid groups of concentrically arranged cells, surrounded by a deposit of thready blue-staining vacuolated mucoid substance, and partly separated by trabeculae of incompletely hyalinized fibrous stroma (Fig. 1). In a few locations the cells enclose alveolar spaces, and in other areas large solid masses of cells are found, without concentric arrangement. In these, and in the centers of the smaller cell groups, the cells are spindle-shaped, becoming spheroidal toward the peripheral zones. At the borders of the solid cell groups many tumor cells lie free in the mucoid substance (Fig. 2). Frequently these isolated cells are distended by an intracytoplasmic accumulation of hyaline pink-staining material which displaces the nucleus. In cells not containing this substance the nucleus is large, ovoid, and reticular, with one or two nucleoli. The cytoplasm is scanty and slightly basophilic. Some of the larger semi-isolated groups of tumor cells are surrounded by a space partly filled with mucoid substance, with an outer border of fibrous tissue which is partially or completely lined by one or more layers of cells similar to those composing the inner cell mass (Fig. 3). Similar spaces, lacking the inner cell group, but filled with mucoid matter, are also present.

The extracellular substance stains pink with mucicarmine. The intracellular hyaline material fails to stain differentially with mucicarmine, pyronin methyl green, safranine, methylene blue, or Hoyer's thionin. The entire mass is enclosed in a fibrous tissue capsule, coarse septa of which extend through it in all directions, and with which the finer trabeculae are continuous. Small islands of adipose tissue are included in the tumor.

Blood vessels and lymphatics are not seen except in the capsule. Small groups of extravasated erythrocytes are present in several locations in the tumor.

DISCUSSION

It appears that the tumor is made up of a single cell type, which is predominantly fusiform, with a relatively large reticular nucleus and slightly
FIG. 2. Photomicrograph showing a large tumor cell group with isolated spheroidal cells about the periphery. × 150

FIG. 3. Photomicrograph showing the capsule and a space lined by tumor cells. × 150
basophilic cytoplasm. This cell exhibits dual potentialities for differentiation, forming either supporting or lining cells, thus imperfectly duplicating the structure of synovial membrane. The cells also appear to have a secretory function, producing a fluid perhaps similar to synovial fluid. This secretory function is not shown by all of the cells, and may also represent functional differentiation. The tumor does not have the appearance of a malignant growth. Cells in mitosis are not found. The growth is active, but is without evident invasive tendency. The clinical course, with a history of slow development and absence of postoperative recurrence, to date, supports the belief that the tumor is benign. It is thought that this tumor arose from a tendon sheath or bursa, following injury. Its significance lies in its origin and therefore in its relationship to certain malignant synovial tumors such as those reported by Smith (2), Wagner (8), and Knox (5).

CONCLUSION

An apparently benign tumor of the hand is described, which is thought to have originated from a tendon sheath or bursa, following injury, and which is considered to be a type of synovioma.

NOTE: The author wishes to thank Dr. S. S. Zuckerman of the Frances E. Warren Memorial Hospital, Cheyenne, Wyoming, for permission to report this case.

REFERENCES