

Spectrum of fibrosarcomas: including low-grade fibromyxoid sarcoma, sclerosing epithelioid fibrosarcoma, myxofibrosarcoma, and adult fibrosarcoma.

Pathologists have come to appreciate that tumors composed of malignant fibroblastic cells and their variants once thought to be rare, represent a large group of soft tissue sarcomas. Factors contributing to this conclusion include the following: ultrastructural demonstration of neoplastic fibroblastic cells in so-called malignant fibrous histiocytoma (MFH), recognition that a significant number of myxoid soft tissue sarcomas of the extremities and trunk are fibrous tumors (e.g. myxofibrosarcomas); and the recent identification of some fibrosarcomas that can be classified as low-grade fibrosarcoma subset of fibrosarcomas.

I. Fibrosarcomas is a group of predominantly fibrosarcomas or sclerosed tumors primarily affecting the extremities of adults of either sex. Recognition of this group started with the description by Evans of low-grade fibromyxoid sarcoma (1,2), a deceptively bland fibrous tumor simulating desmoid tumor, but which had focal myxoid changes and surprisingly a definite metastatic potential. Identification of this tumor has been also hampered by its histologic resemblance to myxofibrosarcoma (3). More recently, Folpe et al (4), in a large study encompassing 73 cases, showed that up to 30% of low-grade fibromyxoid sarcomas show overlapping histologic features with hyalinizing fibrosarcoma with giant rosettes (5,6). Furthermore, a very recent cytogenetic report demonstrated an identical recurrent t(7;16)(q34;p11) translocation in both of these subtypes of fibrosarcoma, thereby providing genetic proof that these two tumors are variants of the same entity (7).

The third member of this group is sclerosing epithelioid fibrosarcoma (SEF) (8,9), which is characterized by a diffuse, dense sclerosis, separating closely packed strands and nests of uniform hyperchromatic epithelioid cells. Overlapping histologic features of SEF with the other two members have been marginally suggested in different reports, but further genetic analysis is needed to unequivocally confirm this hypothesis. The earliest observation of increased cellularity and anaplastic round cell change in low grade fibromyxoid sarcoma, as seen routinely in SEF, was provided by Evans in 1993 (2), which was interpreted as evidence of “dedifferentiation”. Furthermore, Folpe et al (4) described epithelioid cell foci in up to 45% of their tumors having low grade fibromyxoid sarcoma/hyalinizing fibrosarcoma with giant rosettes features.

Ultrastructurally, the unifying concept of fibrosarcomas is based on well-developed fibroblastic features of the neoplastic cells embedded in a dense collagenous extracellular stroma and admixed with a peculiar amorphous granular material. Nielsen et al (10) reported the ultrastructural findings of three cases of hyalinizing fibrosarcomas with giant rosettes. The neoplastic cells showed fibroblastic features with long branching RER complexes. In all tumors in addition to abundant extracellular collagen fibers, large aggregated of granular amorphous material resembling “basement membrane-like” substance was noted admixed with the collagen fibers but also seen within the dilated cisternae. Similar findings were also identified in sclerosing epithelioid fibrosarcoma (9). In a study from our group (9), five of the eight SEF cases studied ultrastructurally showed

intermixed with the collagenous matrix, confluent areas of basement membrane-like amorphous substance. Furthermore, the prominent extracellular matrix was arranged in evenly spaced columns of collagen fibrils squeezing the fibroblastic cells of varying size. Eyden et al (11) described in addition to prominent RER, large Golgi apparatus, which in one case was producing collagen secretion granules. Similar with our findings, Eyden and colleagues did not identify myofibroblastic ultrastructural differentiation in their 5 SEF cases studied. Just as significant is the absence of smooth-muscle actin immunostaining in the overwhelming majority of these tumors classified under fibrosing fibrosarcoma family.

II. Myxoid fibrosarcomas (myxofibrosarcomas)

Myxofibrosarcoma (MFS) is the most common sarcoma affecting limbs of old patients (3,12), and its high-grade end of the spectrum is considered as a myxoid variant of malignant fibrous histiocytomas (MFH) by some authors (13). MFS comprises a very wide morphological spectrum. For high grade lesions, they tend to form solid parts with a continuous transition to a storiform-pleomorphic type MFH. A continuity between high grade and low grade areas of MFS was indicated by the presence of solid high grade components within the low grade tumors as well as the progression of a subset of low grade MFS into high grade tumors in local recurrences (14). Owing to its ultrastructural features closely resembling ordinary fibroblasts, other investigators favored the nomenclature, MFS, instead of myxoid MFH and regarded it as a distinct fibroblastic neoplasm characterized by the myxoid nodular appearance and curvilinear vasculatures with a considerably broad spectrum of nuclear pleomorphism, cellularity, and mitoses (15).

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