Collagenous fibroma (desmoplastic fibroblastoma) is a clinically and morphologically distinct benign fibrous soft-tissue tumor that occurs as a slow-growing, often asymptomatic mass, predominantly in men between ages 20 and 80 years. Usually, it is a well-circumscribed lesion involving the subcutaneous tissue, muscle, or both in a range of locations.

Histologically, collagenous fibroma is a hypocellular lesion, composed of spindle and stellate fibroblasts and myofibroblasts scattered in an abundant collagenous stroma. First described by Evans in 1993 as desmoplastic fibroblastoma, it was reclassified later by Nielsen et al. as collagenous fibroma. Only limited reports of this tumor have been published. The previously described tumors were located mainly on the neck, upper back, shoulder, arm, and foot.

This article presents a case of collagenous fibroma that occurred in the anterior chest wall.

**CASE REPORT**

A 45-year-old man presented with an increasing left anterior chest wall mass of 5 months’ duration that caused aching pain over the mass and paresthesia in the left arm. Medical history included hypertension, asthma, chronic low-back pain, and carpal tunnel syndrome. Family history was significant for hypertension and rheumatoid arthritis.

Physical examination revealed an 11×10-cm left anterior chest wall mass. Magnetic resonance imaging (MRI) revealed a heterogeneous mass within the pectoralis minor muscle (Figure 1). Biopsy confirmed collagenous fibroma (desmoplastic fibroblastoma). The resected mass demonstrated similar diagnostic findings, and the margins were free of involvement.

**Gross Examination**

The resected specimen was an oval-shaped, dark red, soft tissue. It was serially sectioned to reveal a 9.5×8×4.5-cm, white-tan mass with a bulging surface (Figure 2). The mass was well-demarcated from the surrounding tissue and had a rubbery consistency. No hemorrhage, necrosis, or calcification was found.

**Microscopic Findings**

The tumor was an intramuscular lesion, which was well-demarcated from surrounding tissue with a lobular contour. Focally, the borders were infiltrative and skeletal muscle fibers involved were intermingled with the tumor cells (Figure 3). The lesion was variably cellular, mostly hypocellular, and consisted of spindle and stellate cells scattered in an abundant collagenous stroma (Figure 3). Focally, mucinous stromal changes were noted. Lesional cells had vesicular nuclei and prominent nucleoli. No mitosis, necrosis, hemorrhage, or calcification was observed in the resected specimen, although a microscopic focus of calcification was noted in the biopsy specimen.

Immunoperoxidase stains revealed that the tumor cells stained positively for vimentin, smooth muscle actin, and muscle specific...
actin. Stains for cytokeratin, S-100 protein, CD34, and desmin were negative.

Electron microscopy revealed fibroblastic and myofibroblastic cells in a collagenous and myxoid stroma (Figure 4). A portion of tumor also was submitted for cytogenetic study, but was unsuccessful due to lack of dividing cells. (Previous cytogenetic studies have reported trisomy 8 and trisomy 20 aberrations9 and clonal chromosome abnormalities involving the long arm of chromosome 11, 11q1210, supporting the neoplastic nature of this lesion.)

**DISCUSSION**

Fibroma is a large group of soft-tissue tumors with diverse subclassification, distinguished by characteristic clinical and histological features. Collagenous fibroma (desmoplastic fibroblastoma) has been recognized as a distinct entity. The peak incidence is in the fifth and sixth decades of life and has a male predominance (approximately 4:1). Patients usually present with a slow-growing, painless mass. Radiographically, collagenous fibroma often reveals nonspecific imaging features of a solitary nonmineralized lesion with aggressive characteristics (similar to fibrosarcoma and malignant fibrous histiocytoma), thus requiring biopsy or excision for specific diagnosis.7

These lesions usually involve the subcutaneous fat (70%), subcutaneous fat/muscle (23%), or muscle (7%). Reports indicate additional sites of skin,8 spinal epidura,9 synovium,10 and salivary gland.11 The tumors occur mainly in the neck, arm, shoulder, or foot. The lesions also have been reported in the upper back, abdominal wall, and hip, and the tumor now occurs in the anterior chest wall (pectoralis minor muscle).

The gross and microscopic appearance of the tumor described above is characteristic of collagenous fibroma. Tumor cells stained positively for smooth muscle actin and muscle specific myofibroblastic origin, supporting the fibroblastic and myofibroblastic origin.

The main histological differential diagnosis for collagenous fibroma is a variety of benign and low-grade malignant fibrous tumors, especially their senescent forms or hyalinized variants, such as extra-abdominal desmoid (aggressive fibromatosis), nodular fasciitis, sclerotic skin fibroma, calcifying fibrous pseudotumor, neurofibroma, perineurioma, solitary fibrous tumor, elastofibroma, tendon sheath fibroma, nuchal fibroma, myxoma, fibromatosis, and low-grade fibromyxoid sarcoma.12-14 These entities can be distinguished historically from collagenous fibroma. For example, extra-abdominal desmoid is more cellular, vascular, and infiltrative at its periphery, and nodular fasciitis usually has areas of increased cellularity, only small amounts of collagen, and an abundance of ground substance. Occasionally, immunostaining may be required (eg, with S-100 protein), which would be positive in neofibroma and negative in collagenous fibroma.

Despite the small number of reported cases, collagenous fibroma (desmoplastic fibroblastoma) should be recognized and considered in the differential diagnosis of benign or low-grade malignant fibrous soft-tissue lesions.

**REFERENCES**