Sclerotic Fibroma Presenting as an Axillary Mass: A Case Report with Imaging Features

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Sclerotic fibroma or storiform collagenoma is a rare benign neoplasm that predominantly affects the skin layer of the head, neck, or limbs. Less frequently, it occurs in non-dermal spaces such as the subcutaneous layer. No cases have been reported in the axilla, and imaging findings of this rare entity have not been described in the literature so far. We present a case of sclerotic fibroma in the deep subcutaneous fat layer of the axilla and describe its ultrasound and computed tomography imaging features.

Index terms Fibroma; Sclerosis; Collagen; Axilla

INTRODUCTION

Sclerotic fibroma (SF), also known as a storiform collagenoma, is an uncommon benign cutaneous neoplasm with typical histologic feature of hypocellular, hyalinized collagen bundles with prominent clefts. It usually occurs in the skin of any part of the body, but rarely there have been reports of other involvement such as oral mucosa, tendon sheath and nail bed (1-4). Involvement of deep portion of axilla is extremely rare. Due to its rarity, superficial location and removal without radiologic evaluation, imaging features of the disease have not been reported in previous literature so far. Here, we present a case of SF in deep subcutaneous fat layer of the axilla with its imaging findings including mammography, ultrasonography (US) and computed tomography (CT).
CASE REPORT

A 30-year-old female presented with an incidentally palpable axillary mass. On physical examination, the mass was firm and non-tender without overlying skin color change, and measured to be about 5.0 cm. She had no remarkable familial or medical history other than baby delivery a year ago. Mediolateral oblique view of mammography showed a large hyperdense mass in the right axilla and no remarkable abnormality in heterogeneously dense breast parenchyma (Fig. 1A). Subsequent US revealed a well-defined homogeneously hypoechoic mass in the deep subcutaneous fat layer of the axilla without vascularity on color Doppler study (Fig. 1B). There was no mass or other abnormal finding in the right breast parenchyma.

Fig. 1. Sclerosing fibroma in a 30-year-old female, presenting with palpable mass in right axilla.
A. Right mediolateral oblique mammogram shows a huge hyperdense mass (arrow) in the right deep axilla region.
B. Ultrasonography shows a well-defined hypoechoic mass (arrows) in the right axilla in the deep subcutaneous layer. Doppler ultrasonography (not shown) did not reveal any vascularity in the mass.
C. Chest CT scans show a well-defined solid mass (asterisks) in the right axilla located posteriolateral to the pectoralis muscles and anterior to the latissimus dorsi and subscapularis in an axial scan. The mass is seen to be very close to surrounding muscles in axial and sagittal scans (arrows), but definitely separate from surrounding structures. The mass is homogeneously isodense to skeletal muscles on precontrast scanning (63 Hounsfield units) with poor contrast enhancement (67 Hounsfield units).
The contrast-enhanced CT of the chest was performed for evaluation of the exact origin and extent of the mass. It was located in axillary fossa, posterolaterally pectoralis major and pectoralis minor and anteriorly latissimus dorsi and subscapularis muscles and closely abutted to adjacent muscle but no evidence of infiltration to surrounding structures or obliteration of fat plane. (Fig. 1C). The mass was homogeneously isodense to skeletal muscles on precontrast scanning (63 Hounsfield units) with poor contrast enhancement (67 Hounsfield units).

The presumed diagnosis for this lesion included soft tissue tumor such as fibroma, and although the likelihood was low, pathologic lymph node enlargement and neurogenic tumor were also considered. We performed US-guided core needle biopsy using a 14-gauge needle and histopathologic examination revealed hypocellular fibrous stromal tissue only without cytologic atypia or mitotic activity, indicating the possibility of fibrous tumor or fibroepithelial tumor such as phyllodes tumor. Although biopsy result ruled out the possibility of malignancy, because of the large size and discomfort, the patient underwent surgical excision. Grossly, the mass was well-demarcated and sclerotic with whitish, firm cut surface, measuring 6.8 cm × 6.4 cm × 4.8 cm (Fig. 1D). Microscopically, tumor cells consisted of spindle cells with plump collagen bundles showing storiform and wavy architectures on hematoxylin and eosin stain, also there was blue wavy thick collagen bundles in the same tumor on Masson’s trichrome stain (Fig. 1E). These findings indicated the confirmative diagnosis of SF. Also on immunostaining, this tumor was positive for CD34, which is one of the characteristics of SF.

DISCUSSION

SF is a rare benign fibrous tumor that occurs sporadically or as a cutaneous manifestation of Cowden syndrome. SF was first reported in 1972 by Weary et al. (5) in a patient with...
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Cowden’s disease, also known as multiple hamartoma syndrome. But it may occur as a solitary sporadic tumor without this syndrome, which was first described by Rapini and Golitz (1) in 1989. This tumor usually occurs in the skin, but in rare cases, it was reported to occur elsewhere such as oral mucosa, tendon sheath and nail bed. It is more commonly found on the face and limbs but it can appear in any part of the body (1-4). In this presented case, it occurred in the non-dermal portion of the axilla.

Histopathologically, SF composed of hypocellular, hyalinized thick collagen bundles separated from one another by prominent clefts and these thick, sclerotic collagen bundles are arranged in a whorled or plywood-like pattern (1, 2). These characteristic pathological findings were seen in our case, leading to the diagnosis of SF. In many cases, immunohistochemistry shows that SF usually stains positive for vimentin and CD34, and sometimes positive for factor XIIIa (2, 6). Our study also showed positive for CD34.

The pathophysiology of SF has been repeatedly debated. One is that SF is a degenerative or end-stage of pre-existing various neoplastic lesions such as dermatofibromas and neurofibroma, due to hypo-cellularity and characteristic stromal changes (6, 7). Another is that it is a distinctive fibrous neoplasm. One study suggested that it is a proliferative true neoplasm because this case showed the expression of proliferating cell nuclear antigen (PCNA) and Ki-67, the cell proliferation marker (7). Also, another study identified the reactivity of the neoplastic cells with type I procollagen, which is usually identified at sites of active or recent collagen synthesis and deposition, suggesting it may be a specialized fibroblastic tumor (8).

Val-Bernal et al. (9) reported a case of a fibroadenoma in axilla with SF-like stroma and that was located within accessory breast tissue. In our case, however, there was no evidence of accessory breast tissue or the tumor was not changed from fibroadenoma. And also, the lesion was located in the deep subcutaneous layer of the axilla. Although the mass was located very close to the surrounding muscles, it was well distinguished from the surrounding structures. So we thought that the mass did not originated from the fascia or muscles, but rather from mesenchymal cell of the axilla.

The components of axilla include variable structures such as axillary vessels, brachial plexus, lymph nodes, fat, accessory breast tissue, skin, and subcutaneous glands (10). An axillary mass may originate from all of these structures. If there is no characteristic image finding, the differential diagnosis of an axillary mass might be difficult. Although it is a rare entity, if the mass shows similar imaging features to this presented case, SF may be considered in the differential diagnosis.

In conclusion, we report a case of SF occurred in the deep subcutaneous layer of the axilla. Although most SFs occur in the dermis, this case suggests that it can arise from subdermal space and might be considered as a differential diagnosis of an axillary mass.

Author Contributions
Conceptualization, all authors; investigation, K.T.; supervision, L.J.Y.; writing—original draft, K.T.; and writing—review & editing, L.J.Y.

Conflicts of Interest
The authors have no potential conflicts of interest to disclose.
액와부에서 발생한 경화성 섬유종: 영상 소견을 포함한 증례 보고
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경화성 섬유종 또는 나선형 교원종은 주로 머리, 목 또는 사지의 피부층에서 발생하는 드문 양성 종양이다. 드물게 이 종양은 피하층과 같이 진피층이 아닌 곳에서 발생하기도 한다. 이 종양이 액와부에서 발생한 증례는 보고되지 않았을 뿐만 아니라, 영상 소견을 서술한 논문 역시 보고되지 않았다. 저자들은 초음파와 전산화단층촬영의 소견과 함께 경화성 섬유종이 액와부의 깊은 피하층에서 발생한 증례를 보고하고자 한다.

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