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Nodular Fasciitis of the Chest in a Young Woman

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Nodular fasciitis is a benign reactive proliferation that usually involves the deep fascia. Although it is relatively common in the adult population, it is often misdiagnosed as sarcoma due to its rapid growth and pathological features. It rarely presents as a chest wall tumor in young patients. Here, we report a case of nodular fasciitis involving the chest wall of an 18-year-old woman and its surgical management. This case underscores the need to consider nodular fasciitis in the differential diagnosis of chest wall tumors in young patients.

Key words: 1. Chest wall
2. Tumor, benign

CASE REPORT

An 18-year-old woman was referred for the evaluation of right-side pleural thickening found on a chest X-ray during a medical checkup at school. She and her family were unaware of any previous history of a mass and denied any history of trauma, infection, or tuberculosis. On physical examination, it was difficult to palpate the mass due to marked obesity. The skin over the lesion was neither hot nor tender. Gray-scale sonography showed an ill-defined hypoechoic nodule measuring 2.0×1.8 cm in the right fifth intercostal space. The mass was located on the muscular bed of the chest wall without involving the pleura. Color Doppler imaging failed to reveal blood flow inside the mass. Chest computed tomography revealed a well-delineated oval mass approximately 2.4 cm in size in the lateral portion of the right fifth intercostal space with poor central and intense peripheral enhancement (Fig. 1). We opted for surgical resection to obtain a pathological diagnosis which would inform subsequent therapy. The procedure was performed under general anesthesia, with a skin incision made above the lesion. The mass was apparent between the serratus anterior muscle and the ribs. Its exterior surface was well demarcated by the serratus anterior muscle and ribs, and its interior surface was firmly attached to the parietal pleura, intercostal muscles, and fascia. The mass was completely resected, including the parietal pleura, the intercostal muscles, and surrounding soft tissues.

Histopathologic evaluation showed the proliferation of immature fibroblasts with abundant cytoplasm and pale nuclei; cells with irregular bundles scattered in an abundant, loose, and myxoid matrix; and extravasated red blood cells and multinucleated giant cells (Fig. 2), consistent with nodular fasciitis. The patient recovered without any complications with no recurrence of the lesion noted in a serial computed tomography scan follow-up six months after the resection.

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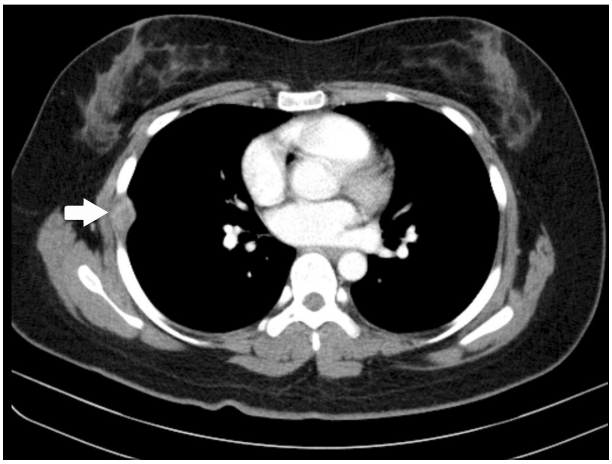

Fig. 1. Chest computed tomography scan showing a well-delineated oval mass approximately 2.4 cm in size in the lateral portion of the right fifth intercostal space (white arrow).

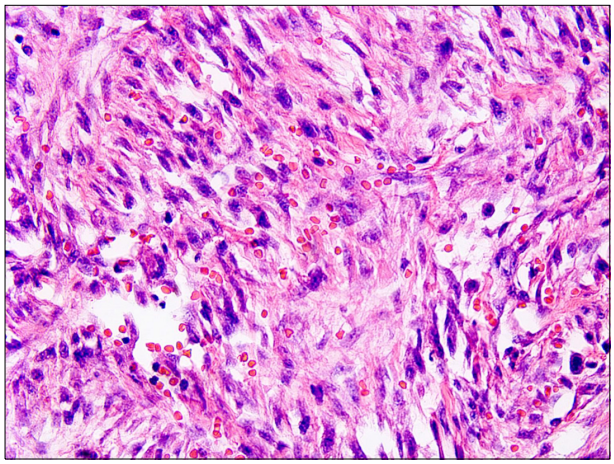

Fig. 2. Histologic findings in a high-power field. Spindle cells indicate the proliferation of fibroblasts or myofibroblasts without hyperchromasia or pleomorphism. Extravasated red blood cells are also present (H&E, ×40).

DISCUSSION

Nodular fasciitis, first described in 1955, was initially named pseudo-sarcomatous fibromatosis. Price et al. [1] first used the term 'nodular fasciitis' to indicate that the tumor originates from the superficial and deep fascia. Due to its rapid growth, abundant cellularity, and mitotic activity apparent on histological examination, nodular fasciitis can be easily mistaken for a malignancy, such as a sarcoma [2]. The incidence of nodular fasciitis remains unknown because it is often misclassified as several forms of sarcomas; however, it typically presents in patients aged between 20 and 40 years, and only 10% of lesions are seen in children [2]. Although a history of trauma has been reported in 10%–15% of patients, leading to the suggestion that the fibroblastic and myofibroblastic proliferation seen in nodular fasciitis is triggered by local injury or local inflammatory processes, the cause of nodular fasciitis remains unknown [2]. The lesion is generally small and solitary, round or oval in shape, tan to gray-white in color, with a maximum diameter less than 3 cm, of variable consistency depending on the mucoid material content [3], and exhibits rapid growth, uncommon spontaneous regression, rare recurrence, and no metastasis [1,2,4]. The most common locations are the upper extremity (48%), trunk (20%), head and neck (17%), and lower extremity (15%) [5]. However, nodular fasciitis can present in any superficial soft tissue of the body, including the breast, mucosal surfaces, bladder, and parotid gland [2]. It is relatively rare in pediatric patients, but commonly involves the head and neck in such patients [3]. Bemrich-Stolz et al. [6] reported that seven out of a total of 18 nodular fasciitis cases in children occurred in the head and neck, followed by five in the upper and lower extremities.

Nodular fasciitis is subdivided into three types according to the predominant histologic findings [7]. Type 1 (myxoid) lesions are composed of spindle, plump, or stellate fibroblast-like cells embedded in myxomatous stroma rich in hyaluronidase-digestible acid mucopolysaccharide. Type 2 (cellular) lesions have higher cellularity and less plentiful ground substance; the fibroblast-like spindle cells are large and plump with vesicular nuclei. Type 3 (fibrous) lesions are characterized by increased collagen production, with fibroblast-like cells having a more slender and spindle-shaped appearance. The histological appearance of nodular fasciitis may show temporal variation from active myxoid to cellular, finally transitioning to the mature fibrous type. The myxoid type should be differentiated from the myxoid variant of malignant fibrous histiocytoma, which usually occurs in older patients and forms a large tumor. The cellular type of nodular fasciitis can be easily mistaken for a sarcoma, while the fi-

brous type may be confused with other benign lesions. In some cases, immunohistochemical studies can help in differentiating nodular fasciitis from non-fibrohistiocytic soft tissue neoplasms or other neoplasms, such as metastatic carcinoma and melanoma [8]. Nodular fasciitis may be misdiagnosed as sarcoma due to its clinical and histological characteristics. As in this case, some chest wall tumors might present a diagnostic challenge, warranting surgical excision, which allows histological confirmation with minimal morbidity. Although nodular fasciitis is rare in younger patients, it should be included in the differential diagnosis of chest wall tumors in such patients.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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