Case Report

Left posterior chest wall reconstruction using a prolene mesh following wide local excision of nodular fasciitis: a case report

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Received: 12 March 2019 / Accepted: 27 March 2019

Abstract

Nodular fasciitis (NF) is a benign, self-limiting condition that is characterized by myofibroblast/fibroblast proliferation. It is commonly seen at the back, trunk, and upper limbs (the volar aspect of the forearm). Patients who are diagnosed with this condition typically present with a history of rapidly enlarging subcutaneous mass over several weeks or months. NF often mimics a malignant process due to rapid growth clinically, high mitotic activity and cellularity, and nonspecific cytomorphologic findings which make the diagnosis pretty challenging. In this paper, we described a case of NF of the left posterior chest wall who underwent wide local excision followed by chest wall reconstruction using a prolene mesh.

Keywords: fasciitis, plastic surgery, sarcoma

Introduction

Konwaler and Weiss were the first ones who described nodular fasciitis (NF) in 1955, and it was also known as infiltrative fasciitis, pseudosarcomatous fasciitis, and pseudosarcomatous fibromatosis. It is a rare, benign tumor that commonly affects the soft tissues of the upper limbs (34%), followed by the head and neck region (24%), trunk (21%), and lower extremity (14%) [1]. Depending on the site and size of the tumor, the treatment of NF varies from corticosteroid injection to CO2 laser application and surgical excision [2]. Hereby, we report a case of NF in a 42-year-old man who presents with a painful swelling at the left posterior chest of 6 months duration.

Case

Mr. Z was a 42-year-old man with an underlying well-controlled bronchial asthma. He complained of a rapidly growing mass over the left posterior chest wall over 6 months duration. He described the swelling as being painful and pricking in nature. The pain did not radiate and was aggravated when the pressure was applied on top of the swelling. Analgesia relieved the pain. He had no prior history of trauma at the site of swelling and constitutional symptoms. He claimed that the swelling did not impair his activities of daily living. He had no family history of malignancy.
On examination, he appeared well nourished. On closer inspection of the left posterior chest wall, there appeared to be a swelling that was approximately 3x4 cm in size. The overlying skin was non-erythematous, non-ulcerated, and had no punctum. The swelling was mildly tender on palpation, firm in consistency, and matted to the underlying structure. There were no enlarged lymph nodes at the left axillary region.

He was first investigated with an ultrasound examination to evaluate the nature of the swelling. The report came back as “A left mid back intramuscular soft tissue mass. Differentials include intramuscular myxoma, lipoma, liposarcoma, or hematoma”. The radiologist suggested magnetic resonance imaging (MRI) of the back for further evaluation. MRI showed that there was a well-defined heterogeneous mass at the left lower posterolateral chest wall and situated in the intermuscular plane between the left latissimus dorsi and adjacent intercostal muscle/rib (between the left 11th and 12th posterior ribs). The mass abutted the adjacent left 11th posterior rib, however, there was no cortical erosion or abnormal marrow signal noted. There was no clear fat plane seen, and no abnormal signal intensity within the adjacent muscle. The mass was hypointense on T1W, heterogeneously hyperintense on T2W, and markedly hyperintense on Short-T1 inversion recovery (STIR). The mass was measured as 2.7x1.6x3.4 cm (WxAPxCC). The impression of the thorax MRI was “Intermuscular soft tissue mass at the left lower posterolateral chest wall with mild surrounding mass effect. Differential diagnoses include malignant fibrous histiocytoma, sarcoma, and metastatic lesion.”

Tissue biopsy was performed and showed a lesion which consisted of plump spindle cells showing variability in cellularity. These cells had plump vesicular nuclei, prominent nucleoli, and eosinophilic cytoplasmic processes and were arranged in short fascicles in areas. Occasional mitotic figures were seen and myxoid changes were evident. The histopathological features were consistent with nodular fasciitis. After considering all investigation findings, the patient was planned for wide local excision, ribs resection, and chest wall reconstruction with a prolene mesh.

Intraoperatively, after taking a 2 cm surgical margin, the lesion was measured as 7x11.5 cm (lengthxwidth) (Figure 1). The excision was performed until the latissimus dorsi and serratus anterior muscle were breached. We noted that the tumor was adherent to the 10th and 11th ribs posteriorly. Therefore, the rib resection was performed. The tumor was excised together with the resected ribs (Figure 2). After the wide local excision, the defect size measured as 7x15 cm (lengthxwidth). Inlay prolene mesh was placed beneath the latissimus dorsi muscle and anchored using Nylon 3/0 suture. A 14 Fr Redivac drain was placed above the mesh. Due to the laxity of the skin, we were able to close the wound primarily (Figure 3).

**Figure 1.** The tumor at the left posterolateral aspect of the chest wall (prior to surgical excision).

**Figure 2.** The resected tumor with 10th and 11th ribs.
Postoperatively, the patient was sent to the general ward for observation and post-operative care. The wound inspection and removal of suture were performed at the 3rd and 14th day after operation, respectively. The patient developed no complication after the surgery and was discharged home well.

**Discussion**

In 1955, Konwaler and Weiss described a rare benign neoplasm which was given the term nodular fasciitis, or infiltrative fasciitis, pseudosarcomatous fasciitis, and pseudosarcomatous fibromatosis. This lesion commonly involves the soft tissues of the upper limbs (34%), followed by the head and neck region (24%), trunk (21%), and lower extremity (14%) [1]. However, various reports have mentioned additional locations that might be afflicted by this tumor such as the external ear, parotid gland, oral cavity, and the breast [1]. WHO defines this disease as a benign and reactive fibroblastic growth that extends from the superficial fascia into the subcutaneous tissue superficially, or may also extend deeper into the muscle layer. The pathogenesis is thought to involve an inflammatory process of fibrous connective tissue [5].

The disease is commonly seen in the second to fourth decade of life and has no gender predilection, which is consistent with the age of our patient [1], and it accounts for 0.025% of all pathologic diagnosis [6]. Majority of patients do not complain of any symptoms, but there have been documented cases that patients complain of shooting pain, paresthesia, or numbness that is attributed to nerve compression by the tumor [7]. There are three types of nodular fasciitis which is characterized according to the plane of tissue involved; subcutaneous, intramuscular, and fascial. The most commonly seen type is the subcutaneous form, which is followed by fascial form, and intra-muscular form being the least common [6].

Though the etiology of this disease is still not fully established, it is thought to arise due to an unusual proliferation of myofibroblast triggered an inflammatory process or local injury [8]. Interestingly, our patient did not complain of any history of trauma at the site of the tumor.

During the initial evaluation phase, fine-needle aspiration biopsy (FNAC) can be performed. The interpretation of the sample can be very challenging due to a relatively small amount of tissue obtained which makes it insufficient for a definitive panel of special stains. Therefore, it is recommended for a complete surgical excision of the lesion to be carried out followed by a full histological evaluation of the lesion [9]. MRI showed that the mass was hypointense on T1W, heterogeneously hyperintense on T2W, and markedly hyperintense on STIR. It also demonstrated marked heterogenous enhancement post-contrast with some central hypointensities. Based on various reports in the literature, the differential diagnoses on MRI for NF include neurofibroma, fibrous histiocytoma, extra-abdominal desmoid tumor, and soft tissue sarcoma [10].

NF can easily be misdiagnosed as a sarcomatous lesion like malignant fibrous histiocytoma or fibrosarcoma owing to the fact that it grows rapidly, has high mitotic activity and rich cellularity [11]. Other important differential diagnoses that have to be ruled out are schwannoma and neurofibroma, both of which are benign nerve sheath tumors.

Following surgical excision, the chances of local recurrence of nodular fasciitis are almost nil (<1%), which makes it easy to achieve complete cure. Spontaneous regression of the disease has also been reported [12].

In conclusion, nodular fasciitis is a rare, benign neoplasm which could occur in various anatomical regions such as the upper extremities, trunk, and head and neck region. It confers good prognosis and has an excellent cure rate following surgical excision due to its low recurrence rate.
Conflict of interest
All authors declare that they have no conflict of interest.

Funding
There was no funding received for this paper.

References