A Rare Nodular Fasciitis Involving the Finger: A Case Report

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Abstract This is a report of a 43-year-old man with nodular fasciitis of the little finger. Nodular fasciitis with its feature of rapid growth and aggressive histological appearance is often mistaken for a malignant neoplasm and rarely involves fingers.

Keywords Nodular fasciitis · Finger tumor · Pseudosarcomatous fasciitis · Proliferative fasciitis · Parosteal fasciitis

Introduction

Nodular fasciitis is a self-limiting benign reactive fibroblastic growth and often mistaken for malignant neoplasm with its feature of rapid growth and histological appearance [2, 3, 5, 6]. Although it is frequently found in the forearm, the lesion distal to the wrist, especially of the finger, is quite rare [3–8]. A case of nodular fasciitis involving the finger is reported with brief review of its clinicopathological features. The patient was informed and consented that data concerning this case would be submitted for publication.

Case Report

A 43-year-old man was referred with 1-month history of rapidly enlarging painless mass in the volar aspect of his right little finger (Fig. 1). The patient denied any history of

infection, trauma, or other soft-tissue mass in the past. The patient had neither remarkable constitutional symptoms nor medical and family histories. Physical examination revealed a rounded elastic–hard mass 2×2 cm in size on the volar aspect of the proximal phalanx of the right little finger. Surface of the mass was smooth to touch, and adhesion between the mass and its overlying skin was not identified. No skin lesion, including dimple which could be frequently seen in Dupuytren’s contracture, was identified over the mass. Range of motion of the little finger was not disturbed by existence of the mass. Radiographs revealed a soft-tissue mass without calcification or ossification. Magnetic resonance imaging (MRI) showed that the well-circumscribed mass, 1.5×2.0×1.5 cm in size, was isointense on T1-weighted images and heterogeneously hypointense or hyperintense on T2-weighted images (Fig. 2a, b). With presumptive diagnosis of soft-tissue tumor including possibility of neoplasm, excisional biopsy was performed. There was no apparent direct invasion of the tumor into the neurovascular bundles or the flexor tendons, and the tumor was excised with a marginal surgical margin (Fig. 3a). Histologically, vascular hyperplasia and mild lymphocyte infiltration were identified. Proliferating spindle-shaped cells were arranged in storiform pattern with small amounts of scar-like collagen and interstitial mucoid degeneration and also arranged in “tissue culture-like appearance” in places (Fig. 3b). Mitotic activity, ranging from one to two mitotic figures per ten high-power fields without any atypical forms, was identified. In immunohistochemical studies, the spindle-shaped cells were positive for vimentin and alpha-smooth muscle actin but negative for desmin and cytokeratin. As results of these histological findings, the tumor was diagnosed as nodular fasciitis. The postoperative course was uneventful, and the patient remained without signs of recurrence 7 months after surgery.

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Figure 1 Subcutaneous mass on the volar aspect of the proximal phalanx of the right little finger.

Discussion

Nodular fasciitis, first reported by Konwaler in 1955, is a rapidly growing lesion of benign fibroblastic tissue [5]. The lesion has been often misdiagnosed as malignant neoplasm in clinical practice due to its rapid growth, rich cellularity, and high mitotic activity [2, 3]. Etiology of nodular fasciitis has been still unclear. Although the lesion is considered a self-limiting reactive process associated with previous trauma [2, 3], number of the past reports without remarkable previous trauma is not few [3, 4, 7, 8]. Nodular fasciitis is commonly diagnosed in young adults between 20 and 40 years of age without a racial or gender predilection and commonly seen in the upper extremities (46%), especially the volar aspect of the forearm followed by the head and neck (20%), the trunk (18%), and the lower extremities (16%) [2]. The hand and foot are rare sites of involvement, and as the best of our knowledge, the finger was involved in only seven cases including our case [4, 6–8]. Most lesions are identified as solitary, well-circumscribed, round to oval subcutaneous nodules which usually measure less than 2 cm in diameter [1]. Although most patients present with realizing a rapidly growing firm nodule with soreness and/or tenderness [2–4], our patient had no subjective symptom. Since neither skin adhesion over the lesion nor limited range of motion of affected finger is generally identified in its clinical features, nodular fasciitis occurring in hand region can be clinically differentiated from a nodule of Dupuytren's contracture. MRI is

helpful for assessment of extension of the lesion but useless for diagnosis because features of nodular fasciitis are nonspecific [4]. Either excisional or incisional biopsy is mandatory to obtain a definite diagnosis. The microscopic features of nodular fasciitis are spindle-shaped cells with an S-shaped wavy bundle, extravasated erythrocytes with vascular proliferation, interstitial mucoid degeneration, and scar-like collagen. Although mitotic figures are common, atypical mitoses are almost never seen [2–4]. The ground substance accounts for the loosely textured feathery pattern or tissue culture-like appearance of nodular fasciitis that constitutes one of the most important diagnostic criteria [2]. Although its appearance on histologic analysis may be a storiform pattern similar to malignant

Figure 2 **a** MRI showed that mass was isointense on T1-weighted images, and **b** heterogeneously hypointense or hyperintense on T2-weighted images.

Figure 3 **a** Cross-section of the solid mass. **b** Mucoid degeneration and proliferating spindle-shaped cells arranged in "tissue culture-like appearance" in places in the microphotograph of the specimen. (hematoxylin and eosin, $\times 20$).

fibrous histiocytoma, nodular fasciitis can be distinguished by its more loosely arranged short bundles of fibroblasts and prominent myxoid matrix. Fibrosarcoma is characterized typically by its long, sweeping fascicular or herring-bone pattern of malignant spindle cells, which is never seen in nodular fasciitis [2]. It is also valuable for diagnosis of nodular fasciitis that immunostains for desmin, cyokeratin, and S-100 are typically negative [4]. Since nodular fasciitis based on accurate pathological diagnosis can be treated effectively by marginal excision with recurrence rate of 1% to 2% [2, 3], aggressive surgery like ray amputation for the lesion of the finger under misdiagnosis of sarcoma reported in the past literature must be avoided [6].

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