ABSTRACT

A 10-year-old boy presented with a swelling of the left mid upper arm of 1 month duration. Fine-needle aspiration (FNA) diagnosis of pseudosarcomatous lesion, suggestive of nodular fasciitis, was made and advised radiological examination. Magnetic resonance imaging (MRI) diagnosis was benign fibroblastic tumor. Excisional biopsy was done and histopathology confirmed the diagnosis of nodular fasciitis. As of now, the child is absolutely alright after 1 year.

Key words: Fine-needle aspiration cytology (FNAC); nodular fasciitis; pseudosarcoma

Introduction

Nodular fasciitis was first reported in 1955 by Konwaller et al. as a pseudosarcomatous condition of unknown etiology. However, a traumatic etiology was postulated by various authors but specific unequivocal examples are rarely documented. Usual sites affected are upper extremities, the trunk, lower extremities, the head, and the neck. There is no sex predilection. Peak age incidence is in the 4th decade but can occur in younger and older age groups as well.

Making a correct diagnosis of nodular fasciitis is important because of its seemingly alarming resemblance to a sarcoma. Any overdiagnosis can lead to serious implications. It is equally important to not make a diagnosis of nodular fasciitis in a frank case of sarcoma.

Case Report

A 10-year-old boy from a primary care government hospital was referred to cytopathology for doing fine-needle aspiration cytology (FNA) on a circumscribed firm swelling of the left mid-upper arm of 1 month duration in the subcutaneous tissue measuring 5 cm × 3.5 cm. The lesion was not fixed to underlying tissue or to the skin. The clinical diagnosis was malignancy. There was no pain, tenderness, or any other systemic manifestations. He gave a history of trauma at the site of the lesion with a cricket bat while playing. FNAC was done. Cytology showed highly cellular smears with a polymorphic appearance [Figure 1]. Predominantly, the cells were large and fibroblast-like with well-defined cytoplasmic borders. The nuclei showed pleomorphism with fine, evenly distributed chromatin and prominent nucleoli in many of the cells with occasional mitotic figures which were typical. A few scattered lymphocytes and neutrophils were present. The background was slightly myxoid. The possibility of a pseudosarcomatous lesion suggestive of nodular fasciitis was given and suggested radiological evaluation of the child. Plain X-ray detected no lesion. Magnetic resonance imaging (MRI) showed a well-defined subcutaneous focal mass lesion...
with no deeper extension into the muscle plane or vascular involvement. Suggested radiological diagnosis was a benign fibroblastic tumor (nodular fasciitis or fibroma). An excision biopsy was done and the diagnosis of nodular fasciitis was confirmed histopathologically.

Discussion

Nodular fasciitis is a benign but rapidly growing lesion that can mimic malignancy clinically and morphologically very well but not radiologically. It is considered as a reactive proliferation of myofibroblasts presenting as a soft tissue mass. Usually they are solitary lesions less than 5 cm in size and of few weeks' duration, affecting usually young or middle-aged adults. This lesion has a predilection for certain sites and age groups, but can occur anywhere on the body and can affect any age group, including children. Based on the spectrum of morphological features, nodular fasciitis can further be classified into myxoid, cellular, and fibrous types.²

The most important pathological differential diagnosis of this condition at this site is a soft tissue sarcoma. In fact, this is the most common benign condition misdiagnosed as sarcoma. A very high rate of misdiagnoses has been reported. Plaza et al.⁴ reported that 2/3 of their cases had been misdiagnosed as sarcoma. However, Willen et al.⁵ and Wong⁶ believe that distinction of nodular fasciitis from sarcoma can be made on FNAC, provided the clinical course is taken into account. Clinically as well, this condition can very well mimic a sarcoma. But the MRI offers an accurate assessment as to the plane of involvement, soft tissue extension, and the characteristics of the focal lesion, thereby, suggesting the benign nature of the lesion.

The other important close differential diagnosis is fibromatosis. But it is less cellular compared to nodular fasciitis. The myxoid background of nodular fasciitis is not seen in fibromatosis as well. Schwannoma is still another differential diagnosis where the stroma can be myxoid but appears more finely fibrillar and cell clusters may show alternating areas of hypercellularity and hypocellularity. Other differential diagnosis, although less common in this location, include solitary fibrous tumor and dermatofibrosarcoma protuberans.

Establishing the diagnosis cytologically can often be very challenging. For more precision in diagnosis, immunocytochemical stains can be used. This may not always be possible with limited material as happens in cytology and, hence, may need excisional biopsy. However, the pattern of immunostaining is very often not typical.⁶ The majority of nodular fasciitis are negative for cytokeratin, while a few cases have been found to be positive. Positive staining with alpha-smooth muscle actin (α SMA) is noted in nodular fasciitis, suggesting a myofibroblastic differentiation and less possibility of a sarcoma. S₁₀₀ protein which is positive in schwannoma is found to be negative in nodular fasciitis. Desmin, which is positive in various soft tissue sarcomas is often negative in nodular fasciitis.

Being a benign lesion, the traditional treatment is local excision and these lesions usually do not recur. However, being a reactive proliferation, the natural history of the lesion could be spontaneous resolution. There are a few reports⁷ where FNAC was done and spontaneous resolution occurred within 2-16 weeks. But in our case, excision was advised considering the larger size of the lesion.

We present this case of a child with a clear history of trauma developing nodular fasciitis at the site and doing well after nearly 1 year without recurrence. It was possible to suggest the diagnosis from fine-needle aspiration (FNA) material supported by MRI findings and diagnosis was established by biopsy.

This case report supports the current suggestion that nodular fasciitis is not a neoplasm but rather a reactive proliferation following trauma and that excision is curative if spontaneous resolution does not occur.

Figure 1: FNAC smear PAP stain 40× (above) cellular smear showing predominantly spindle-shaped cells with nuclear atypia. Histopathology section H and E stain 40× (below) pleomorphic cells with atypical nuclei and hyalinized stroma
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