

# Nodular Fasciitis: A Diagnostic Dilemma

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### SUMMARY

A 65 year old man presented with a right upper cervical mass. A diagnosis of pleomorphic adenoma was reported on fine needle aspiration cytology (FNAC). CT scan however reported an intramuscular sternocleidomastoid swelling. The tumor was excised and a diagnosis of nodular fasciitis was made. It is important to be aware of this diagnosis and that FNAC reports may mimic that of a pleomorphic adenoma.

### KEY WORDS:

Nodular fasciitis, Fine needle aspiration cytology, Pleomorphic adenoma

### INTRODUCTION

Nodular fasciitis is a benign, idiopathic, reactive proliferation of myofibroblasts, which typically presents as a solitary, rapidly enlarging nodule. First reported in 1955 by Konwaller *et al*,<sup>1</sup> who named it pseudo-sarcomatous fasciitis because it resembles sarcoma, this disorder is generally self-limited, and lesions rarely recur, even when excised with positive margins. The review of two large case series, noted that lesions most commonly occurred on the upper extremities (43%), followed by the trunk (25%), the lower extremities (22%), and the head and neck (10%)<sup>2</sup>. The incidence of nodular fasciitis peaks in the fourth decade of life, with an approximately equal sex distribution. Most patients present with a history of a tender swelling with a short duration of onset and recent trauma to the site.

### CASE REPORT

A 65 year old Chinese gentleman was seen in our ENT clinic with a Right sided painless, progressively enlarging cervical neck swelling of two months duration. He had no other symptoms and gave no history of trauma to the neck region. He was diagnosed as *Pleomorphic adenoma* by a private surgeon based upon the *Fine needle aspiration cytology* report. On examination there was a firm, smooth, restricted right sided neck mass extending from the angle of mandible till the middle one third of the clavicle underlying the sternocleidomastoid muscle. The patient had no palpable cervical, submandibular, or posterior auricular lymphadenopathy. The remainder of his physical examination was unremarkable. We repeated the fine needle aspiration biopsy at our centre, however the specimen taken was found to be unsatisfactory for reporting. Computed tomography however revealed a Right Sternocleidomastoid intramuscular tumour, indicated by the alphabet 'A' with a differential diagnosis of

Organized hematoma or Unilateral Sternocleidomastoid hypertrophy. Fig. 1

The tumor was excised on the 1st of August 2005. Intraoperatively we noted a large mass (5 x 3 cm), arising from the right sternocleidomastoid muscle with muscular stalks attached to the mastoid process. The tumor was also adherent to the right common carotid artery, where as the right internal jugular vein and all other surrounding structures were free of tumor. On cut section the tumour was fleshy containing muscle bundles. Post operatively patient recovered well. On review microscopically there was a lesion lying within the muscle planes which is composed of interlacing bundles of oval to spindle shaped cells. There were inter-digitating bands of collagen with focal extravasation of red cells, however no cellular atypia or increased mitoses was seen. Immunostaining was positive for Vimentin and S 100. Hence it was interpreted as Nodular *Fasciitis*. Fig 2

### DISCUSSION

Nodular fasciitis is a rapidly growing lesion of benign fibroblastic tissue that most commonly is diagnosed in young and middle aged adults, with a peak incidence in the third and fourth decades of life. The most common presentation is a rapidly growing, tender, firm nodule of one month or less in duration<sup>2</sup>. Most lesions are found as solitary, round to oval subcutaneous nodules, however involvement of the deep fascia and muscle can occur in a small percentage of patients<sup>3</sup>. After a period of rapid growth, the lesion tends to plateau and stabilize in size and usually measures less than 2cm in diameter. However, larger sizes as much as 10cm may be encountered. In such cases, care in making the diagnosis of nodular fasciitis is recommended because of its similarities to some fibrosarcomas.

Nodular fasciitis may occur virtually anywhere in the body, but there is a predilection for certain sites. The most common site is in the upper extremity, especially the volar aspect of the forearm followed by the upper trunk then by the head and neck. Despite an unknown etiology nodular fasciitis is considered a self-limiting reactive inflammatory lesion due to an association with previous trauma.

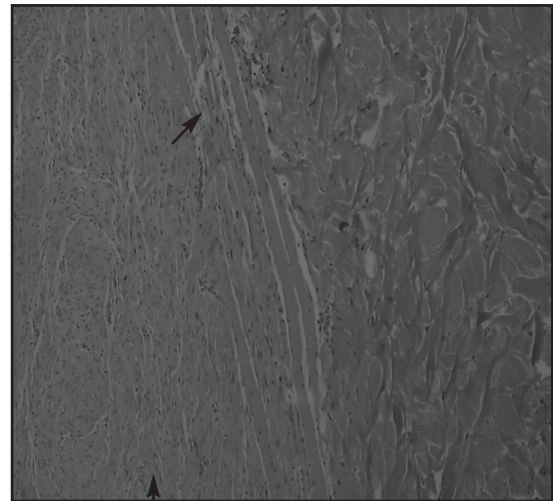
Radiographic evaluation of these lesions with MRI renders an accurate assessment of the degree of soft tissue extension. On MRI, lesions appear as well defined, round, or oval masses. Intramuscular lesions appear mildly inhomogeneous and hyperintense to skeletal muscle on T1-weighted spin-echo

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**Fig. 1:** Right Sternocleidomastoid Intramuscular Tumor as depicted by the alphabet 'A'.



**Fig. 2:** Hematoxylin and eosin staining (magnification x10). The thin arrow is pointing at the inflammatory cells and the large arrow at the nodular lesion.

images; whereas, on T2-weighted spin-echo images the lesions are relatively homogeneous with hyperintense signal to subcutaneous fat<sup>3</sup>. Subcutaneous lesions, typically more fibrous than the intramuscular lesions, are markedly hypointense to skeletal muscle on all spin-echo sequences and appear homogeneous in texture.

Microscopically, plump fibroblasts with large nuclei typically are found. These large nuclei often house prominent nucleoli, which renders these cells with a pseudosarcomatous appearance. Although mitotic figures are common, atypical mitoses almost never are seen. These fibroblasts often are arranged in short irregular bundles of cells, which are accompanied by a dense reticulin meshwork. The most important diagnostic criteria of nodular fasciitis histologically is the abundance of ground substance in a loosely textured feathery pattern or tissue culture.

Most lesions are treated effectively by local excision, however in some cases recurrence has been associated with incomplete excision of the lesion. In contradiction to this some authors have reported that even incompletely resected lesions do not recur<sup>2</sup>. Thus, recurrence after resection should raise the question of an alternative diagnosis. The clinical differential diagnosis of nodular fasciitis depends in part on the location of the lesion. When the lesion is found on the extremities, nodular fasciitis may be confused with a fibroma, lipoma, desmoid tumor, sarcoma, chondroma, myxoma, malignant fibrous histiocytoma, schwannoma, or other soft tissue lesions. Consider atypical fibroxanthoma and parotid tumors when the lesion is found on the head and neck. Therefore, tissue diagnosis is critical in cases of suspected nodular fasciitis to rule out malignancy.

Stanley and colleagues<sup>5</sup> found FNA useful in the diagnosis and management of nodular fasciitis. In their series, 11 patients were diagnosed as having nodular fasciitis, based on clinical and FNA findings. Other investigators have found FNA to be unreliable because of the cytologic similarities in diagnosis of benign nodular fasciitis and malignant sarcomas, thus rendering an accurate diagnosis challenging.

**CONCLUSION**

Overall, FNA of soft tissue lesions in the clinical setting is useful for the exclusion of metastatic carcinoma, lymphoma, and an infectious process, all of which may be definitively characterized by FNA. In addition, high-grade sarcoma is readily diagnosed by FNA, although precise classification may be difficult and may require histologic sampling. The relatively small amount of tissue obtained is often insufficient for a definitive panel of special stains, and thus surgical excision with histologic evaluation is recommended. Therefore, caution should be maintained when using FNA to diagnose nodular fasciitis.

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