

## Case Report

# Intraneural nodular fasciitis of the radial nerve with rapidly progressive motor symptoms

Swetha J. Sundar, Andrew T. Healy<sup>1</sup>, Steven J. Shook<sup>2</sup>, Kambiz Kamian<sup>3</sup>Case Western Reserve University School of Medicine, Cleveland, OH 44106, Departments of <sup>1</sup>Neurosurgery and <sup>2</sup>Neurology, Cleveland Clinic, Cleveland, OH 44195, USA, <sup>3</sup>Department of Neurosurgery, Dayton Children Hospital, Dayton, OhioE-mail: Swetha J. Sundar - [sjs165@case.edu](mailto:sjs165@case.edu); Andrew T. Healy - [athealy83@gmail.com](mailto:athealy83@gmail.com); Steven J. Shook - [shooks@ccf.org](mailto:shooks@ccf.org);\*Kambiz Kamian - [Kamiank@childrensdayton.org](mailto:Kamiank@childrensdayton.org)

\*Corresponding author

Received: 29 April 15 Accepted: 11 November 15 Published: 16 March 16

## Abstract

**Background:** Nodular fasciitis is a benign mesenchymal tumor arising from fascia that typically presents as a rapidly growing, subcutaneous mass. Intraneural cases are very rare and can present with neurological symptoms, requiring surgical resection.**Case Description:** A 31-year-old woman presented to us with painful paresthesias in her elbow and progressive motor deficits, for which she underwent surgery.**Conclusion:** The authors report the first case of intraneural nodular fasciitis occurring in the radial nerve and highlight the possibility of rapidly progressive motor deficit in patients presenting with this rare clinical entity.**Key Words:** Fasciitis/diagnosis, fasciitis/surgery, peripheral nervous system neoplasms, radial nerve, radial neuropathy**Access this article online****Website:**[www.surgicalneurologyint.com](http://www.surgicalneurologyint.com)**DOI:**

10.4103/2152-7806.178776

**Quick Response Code:**

## INTRODUCTION

Nodular fasciitis is a rapidly growing, benign proliferation of myofibroblasts that arises from fascia, often presenting as a subcutaneous mass, and commonly found in the upper extremity.<sup>[1,8,11]</sup> It is characterized by a self-limiting course that has been observed to spontaneously regress; however, symptomatic presentations have been treated successfully with surgical resection and recurrence occurs in <2% of patients.<sup>[6,12]</sup> Intraneural nodular fasciitis is very rare and has only been reported in seven cases.<sup>[2,4,5,7,9,10,13]</sup> We report a case involving the radial nerve presenting with painful paresthesias and progressive motor symptoms. Only one other case in the literature has described rapidly progressive motor weakness; we present the second instance of such, accentuating the potential surgical nature of intraneural nodular fasciitis.

## CASE HISTORY

### History and examination

A 31-year-old female with no history of trauma presented with a 6-month history of electrical, shooting pain and

occasional numbness in her left elbow and hand. Prior treatment with nonsteroidal anti-inflammatories and a short course of corticosteroids did not help. Her painful paresthesias worsened, and electromyography revealed radial nerve sensory neuropathy; however, the motor examination was normal. Upon initial evaluation in July 2013, she noted new left-hand weakness. Examination revealed an irregular, tender, immobile lesion roughly 2 cm in diameter in the antecubital fossa, with severe paresthesias in a radial distribution. Motor examination was significant for left-sided wrist drop (2/5), and similar weakness in finger extension. Magnetic resonance imaging and ultrasound revealed a lesion measuring approximately

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

**For reprints contact:** [reprints@medknow.com](mailto:reprints@medknow.com)

**How to cite this article:** Sundar SJ, Healy AT, Shook SJ, Kamian K. Intraneural nodular fasciitis of the radial nerve with rapidly progressive motor symptoms. *Surg Neurol Int* 2016;7:28.

<http://surgicalneurologyint.com/Intraneural-nodular-fasciitis-of-the-radial-nerve-with-rapidly-progressive-motor-symptoms/>

33 mm × 16 mm × 28 mm with ill-defined margins surrounding the radial neurovascular bundle at the distal humerus [Figures 1 and 2]. Needle biopsy revealed a low-grade spindle cell lesion. The patient was taken to surgery in July.

### Treatment course

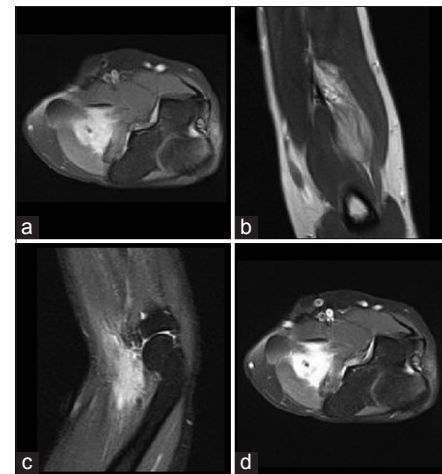
In surgery, a red, fragile mass encasing the radial nerve was observed medial to the brachioradialis [Figure 3]. Distally, the radial nerve was swollen near its division to the superficial and deep branches. There was intramuscular invasion of the brachioradialis and extensor carpi radialis. Nerve dissection revealed the mass extensively invaded the epineurium, perineurium and endoneurium. Microsurgical techniques were used to dissect each fascicle from the lesion.

Three months after surgery, the patient showed dramatic recovery and reported no pain. Her motor function showed improvement – wrist extension was 4+/5 and finger extension was 4–/5. Sensory examination revealed minor residual hypesthesia in the radial distribution. One year after the surgery the motor examination of the radial nerve was normal and the sensor exam was back to normal. There was no evidence of recurrence 20 months after the surgery.

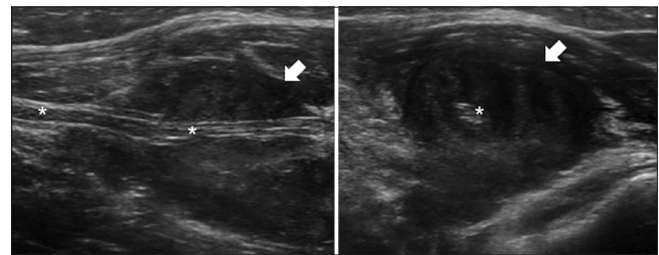
### DISCUSSION

Nodular fasciitis is a benign mesenchymal tumor that typically presents as a rapidly growing mass. The etiology of nodular fasciitis is not known, but the current theory is that local trauma or inflammatory processes can trigger proliferation of myofibroblasts.<sup>[1,3]</sup> Intraneural nodular fasciitis is rare, and there are only seven cases that have been reported in the literature [Table 1]; three in the ulnar nerve, two in the sciatic nerve, one in the median nerve, and one in the obturator nerve.<sup>[2,4,5,7,9,10,13]</sup>

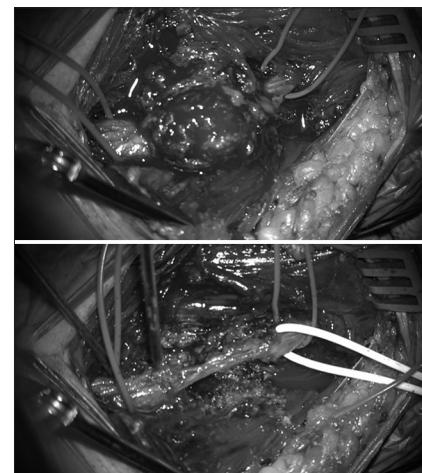
Our patient's initial complaints were sensory and only in the final month prior to surgery did motor symptoms appear and progress rapidly. There is only one other intraneural case to describe motor symptoms that progressively worsened, and it occurred in the median nerve of a 79-year-old female.<sup>[13]</sup> Of the six nontraumatic cases [Table 1], two were incidental findings that did not present with neurological deficits,<sup>[2,10]</sup> one presented with only sensory deficits,<sup>[13]</sup> and the remaining three presented with both sensory and motor deficits that remained stable until the lesion was surgically removed.<sup>[4,7,9]</sup> Only one case involved trauma, where the patient fell and had acute progression of motor weakness. However, the severity of symptoms plateaued and remained stable until surgery.<sup>[5]</sup> From April to July 2013, our patient's motor symptoms progressed from subjective weakness to wrist drop on physical examination.



**Figure 1: Magnetic resonance imaging of a left antecubital lesion. (a) Axial T2-weighted; (b) coronal T2-weighted; (c) sagittal short T1 inversion recovery; and (d) postcontrast T2-weighted image. All depict an enhancing (d) mass with ill-defined borders involving the radial nerve and surrounding musculature**



**Figure 2: Ultrasound imaging of radial nerve (\*) and lesion (arrow) in sagittal (left) and coronal (right) planes**



**Figure 3: Intraoperative image of the radial nerve. Top, depicts the radial nerve isolated with an infiltrative intraneural mass lesion. Bottom, depicts the radial nerve postresection**

Intraneural nodular fasciitis is an unusual lesion that can present as a rapidly growing mass with neurological symptoms. We report the first case occurring in the radial nerve and highlight the possibility of rapidly progressive motor deficit in patients presenting with this rare clinical entity.

**Table 1: All reported cases of intraneural nodular fasciitis**

Authors and year	Age (years), sex	Nerve	Location	Presenting symptoms				Progression, duration	Treatment, outcome
				Antecedent trauma	Mass	Sensory	Motor		
Fallah <i>et al.</i> , 2008	34, female	Obturator	Thigh	–	+	–	-	Expanding mass, 8 weeks	STR, N/A
Ikeda <i>et al.</i> , 2005	42, female	Ulnar	Hand	–	+	+	HI	Expanding mass, 10 days	GTR, mild residual numbness
Kakutani <i>et al.</i> , 2010	37, female	Sciatic	Thigh	+	–	+	DF	Stable weakness, N/A	STR, residual foot drop
Kim <i>et al.</i> , 2011	51, male	Ulnar	Hand	–	–	+	HI	Stable weakness, 8 weeks	GTR, full recovery
Mahon <i>et al.</i> , 2004	32, male	Ulnar	Wrist	–	–	+	HI, fifth digit adduction	Stable weakness, 6 weeks	STR, full recovery
Parrett <i>et al.</i> , 2007	37, female	Sciatic	Thigh	–	–	–	-	None (incidental), 7 years	STR, N/A
Yano <i>et al.</i> , 2011	79, female	Median	Forearm	–	–	+	-	Progressive weakness, 14 weeks	STR, mild residual weakness
Present case	31, female	Radial	Forearm	–	+	+	Wrist drop	Progressive weakness, 8 weeks	GTR, mild residual weakness

Table 1 represents all known cases of intraneural fasciitis. Progression refers to the course of symptoms preoperatively. DF: Dorsiflexion, HI: Hand intrinsics, STR: Subtotal resection describes maximal safe removal of the lesion, with preservation of all neural elements, GTR: Gross total resection describes removal of the lesion entirely, including inseparable neural elements, N/A: Not available

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

- Bernstein KE, Lattes R. Nodular (pseudosarcomatous) fasciitis, a nonrecurrent lesion: Clinicopathologic study of 134 cases. *Cancer* 1982;49:1668-78.
- Fallah A, Grochmal J, Lu JQ, DiFrancesco LM, Khalil M, Clark AW, *et al.* Nodular fasciitis presenting in the obturator nerve and gracilis muscle. *Can J Neurol Sci* 2008;35:111-4.
- Graham BS, Barrett TL, Goltz RW. Nodular fasciitis: Response to intralesional corticosteroids. *J Am Acad Dermatol* 1999;40:490-2.
- Ikeda K, Hagiwara N, Funaki K, Tomita K, Sudo Y. Nodular fasciitis of the ulnar nerve at the palm. *Scand J Plast Reconstr Surg Hand Surg* 2005;39:249-51.
- Kakutani K, Doita M, Nishida K, Akisue T, Maeno K, Zhang Z, *et al.* Intractable sciatica due to intraneural nodular fasciitis detected by positron emission tomography. *Spine (Phila Pa 1976)* 2010;35:E1137-40.
- Katz MA, Beredjikian PK, Wirganowicz PZ. Nodular fasciitis of the hand: A case report. *Clin Orthop Relat Res* 2001;(382):108-11.
- Kim H, Baik MW, Kim J, Jo KW. Ulnar nerve compression in the cubital tunnel by a nodular fasciitis. *Clin Neurol Neurosurg* 2011;113:803-5.
- Kleinstiver BJ, Rodriguez HA. Nodular fasciitis. A study of forty-five cases and review of the literature. *J Bone Joint Surg Am* 1968;50:1204-12.
- Mahon JH, Folpe AW, Ferlic RJ. Intraneural nodular fasciitis: Case report and literature review. *J Hand Surg Am* 2004;29:148-53.
- Parrett BM, Orgill DP, Marsee DK, Freedman AS, Raut CP. Novel presentation of intraneural nodular fasciitis of the sciatic nerve. *J Peripher Nerv Syst* 2007;12:61-3.
- Shimizu S, Hashimoto H, Enjoji M. Nodular fasciitis: An analysis of 250 patients. *Pathology* 1984;16:161-6.
- Yanagisawa A, Okada H. Nodular fasciitis with degeneration and regression. *J Craniofac Surg* 2008;19:1167-70.
- Yano K, Kazuki K, Yoneda M, Ikeda M, Fukushima H, Inoue T. Intraneural nodular fasciitis of the median nerve: Case report and literature review. *J Hand Surg Am* 2011;36:1347-51.