ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

International Journal of Medical Science and Advanced Clinical Research (IJMACR)

Available Online at:www.ijmacr.com

Volume – 7, Issue – 4, August - 2024, Page No. : 185 – 189

Case Report: A rare case of Right Common Peroneal Nerve Schwannoma

[1]Dr.Rajesh Kishanrao Ambulgekar, HOD, Department of Orthopaedics, DrSCGMC, Nanded

[2]Dr. Prabuddha B. Husale, Junior Resident, Department of Orthopaedics, Dr.SCGMC, Nanded

Corresponding Author: Dr. Prabuddha B. Husale, Junior Resident, Department of Orthopaedics, Dr.SCGMC, Nanded.

How to citation this article: Dr. Rajesh K. Ambulgekar, Dr. Prabuddha B. Husale, "Case Report: A rare case of Right Common Peroneal Nerve Schwannoma", IJMACR- August - 2024, Volume – 7, Issue - 4, P. No. 185 – 189.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Schwannomas are the most common benign peripheral nerve sheath tumors. They rarely undergo malignant transformation (1). However, reports of the common peroneal nerve schwannoma are rare in the literature. In this report, we describe the case of a 26-year-old woman with a giant peroneal nerve schwannomas of the common peroneal nerve that had persisted for more than 2 years without distal neurovascular defects. The tumor was removed without recurrence to date. A brief review of the literature regarding this tumor, its diagnosis, imaging, pathologic findings, and surgical treatment is described.

Keywords: Neurovascular, Schwannomas, Tumor, Diagnosis, Imaging, Pathologic.

Introduction

Schwannomas are encapsulated benign peripheral nerve sheath tumors composed primarily of Schwann cells. Malignant transformation is known to be extremely rare (1). Lesions usually occur solitarily, but multiple tumors have been reported in the extremities [2]. Schwannomas most commonly occur in the head and neck region, affecting the brachial plexus and spinal nerves. The lower extremities are less frequently affected [3]. Schwannomas are usually slow-growing, painless tumors that can last for years without specific symptoms. Because lower extremity schwannomas are often mistaken for benign solitary masses such as ganglion, fibromas, and myxomas, diagnosis is often delayed for years [4]. Schwannomas are well encapsulated and eventually replace nerve bundles, whereas neurofibromas surround nerve bundles. For this reason, it is generally believed that schwannomas can be easily enucleated from nerves without causing neurological deficits. [5] However, despite careful preparation, multiple schwannomas may not be easily enucleated, which increases the risk of temporary or permanent nerve damage [6]. The threshold for iatrogenic injury during surgical excision is generally lower in the extremities than in the trunk. In particular, severe neurological deficits such as motor weakness are of great importance in the lower extremities [5]. Schwannomas

commonly occur between the ages of 20 and 50. It affects men and women equally. Schwannomas of the common peroneal nerve are rare and often present with symptoms related to nerve compression. [8] Surgical resection is generally curative [9]. The most common symptom is an eccentric mass loosely attached to the nerve. [10]

Case Presentation

A 26 years old female presented with complaint of a mass on posterolateral side of proximal third leg. The mass has been growing slowly over a period of more than 20 years and that had been gradually limiting knee movements for several months. No history of trauma was reported. Physical examination revealed a well palpable dense tumor mass in the posterolateral aspect of the popliteal fossa, not fixed to the overlying skin, not fixed to underlying bone and slightly mobile. No disturbance of the function of the CPN function was found. Patient had no significant past medical history. On contrast-enhanced MRI, a well-demarcated ovoid formation posterior to the head of the fibula was observed within the CPN, measuring 80 millimeters in its largest dimension (Fig. 1). A preoperative diagnosis of schwannoma of the CPN was accepted.

Patient was taken in a lateral position. Spinal anaesthesia was given and tourniquet was applied after squeezing the blood out with eshmark. Surgery was performed through a longitudinal incision over the tumor mass. Soft tissue was separate by meticulous dissection. After the CPN was located, its sheath was incised longitudinally and the tumor was enucleated from within the nerve. Complete haemostasis was achieved. Wash was given with betadine and NS. Suturing was done in layers.

Preoperative images

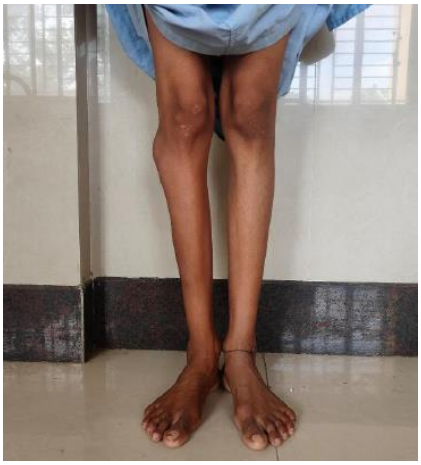


Figure 1

Figure 2

Investigations

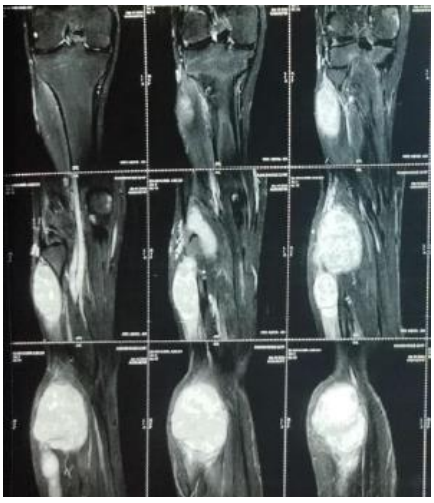


Figure 3

On contrast-enhanced MRI, a well-demarcated ovoid heterogenous formation posterior to the head of the fibula

Intraoperative images

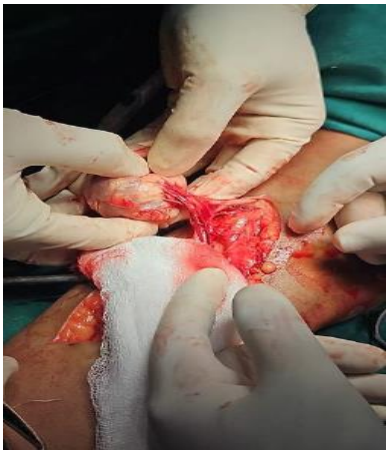


Figure 4

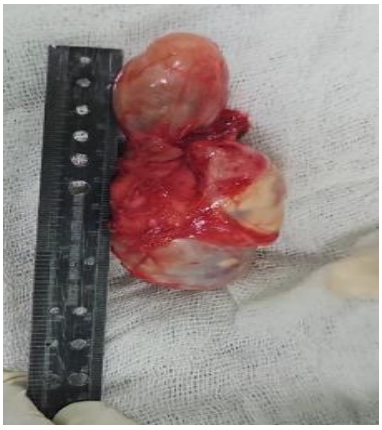


Figure 5

Postoperative image

Figure 6

Discussion

Schwannomas, are the most common peripheral nerve sheath tumors, derived almost exclusively from Schwann cells. Schwannomas account for approximately 89% of all nerve sheath tumors, with the most common location being the vestibular region, accounting for 60%. Approximately 32.6% of schwannomas occur in the extremities. Schwannomas typically range in size from 2 to 20 cm, with most being less than 5 cm in size, and those larger than 5 cm are called giant schwannomas. When confined to the legs, the maximum length usually does not exceed 10 cm [14]. Early diagnosis and surgical intervention are important to prevent long-term neurological deficits. MRI is the imaging modality of choice for the diagnosis of schwannomas, and surgical resection is usually curative. The diagnosis of schwannomas is based on MRI findings. The tumor often presents as an eccentric mass close to the affected nerve, with a well-defined capsule that is homogeneously isointense or hypointense on T1-weighted images and hyperintense on T2-weighted images. The intramuscular mass may be surrounded by fat, which may produce a “fat splitting sign” on T1-weighted long-axis images of the affected limb. The “target sign” is indicated at 50%. Due to the zonal effect of fibrous tissue confined to

the center and myxoid material confined to the periphery, there may be a centrally hypointense signal and peripherally hyperintense signal [16]. Neuromas are divided into three types based on their origin in the nerve. The first type arises from the main nerve located between the muscles and may cause symptoms. The second type arises from the minor superficial sensory branches located under the skin. The third type arises from the motor nerve bundle within the muscle. The last

two types are usually asymptomatic. This classification system is useful for preoperative diagnosis and may aid in the selection of surgical procedures, as surgical resection of the primary nerve type may result in neurological deficits [15]. Microscopically, schwannomas are well-defined with a surrounding capsule. They contain clusters of Schwann cells with spindle cell morphology, known as the Anthony A pattern, and loosely packed microcystic areas, known as the Anthony B pattern.

Figure 7: Antoni A patterns

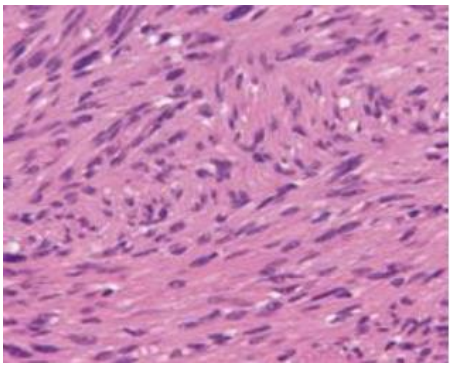
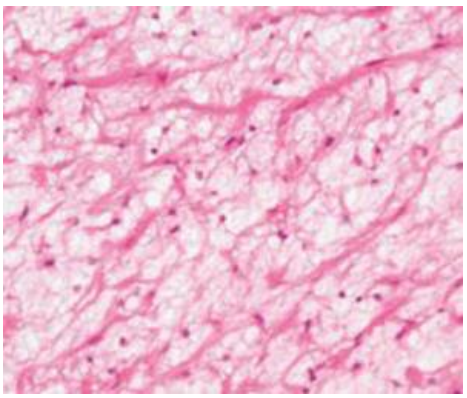


Figure 8: Antoni B patterns



Conclusion

In our opinion, our case extends the existing literature with several important features, including young age, location, size, and duration of symptoms. In the case described, the schwannoma affected the CPN without neurological symptoms and lasted for more than 2 years. The absence of neurological symptoms can be explained by the slow growth of the tumor and the adaptation of the nerve to the space occupied by the tumor.

References

1. Georgi P. Georgiev, Julian Ananiev, Svetoslav A. Slavchev, An unusual case of a giant schwannoma of the common peroneal nerve with duration of twenty years, Current Problems in Cancer: Case Reports, Volume 3, 2021, 100061, ISSN 2666-6219
2. Sheikh MM, De Jesus O. Vestibular Schwannoma. [Updated 2023 Aug 23]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan
3. Ansari I, Ansari A, Graison AA, Patil AJ, Joshi H. Head and Neck Schwannomas: A Surgical Challenge-A Series of 5 Cases. Case Rep Otolaryngol. 2018 Mar 4
4. Addi Palle LR, Depa VGR, Shah K, Soto CJ, Aychilluhim BA, Rakhunde VV. Peripheral Schwannoma Presenting as a Retro-Malleolar Mass: A Case Report. Cureus. 2023 Jul 19;
5. Kim SM, Seo SW, Lee JY, Sung KS. Surgical outcome of schwannomas arising from major peripheral nerves in the lower limb. Int Orthop. 2012 Aug
6. Xinwei Li, Guohua Zhong, Xueying Xu, Kun Wang, Yinxin Zhu, Xuchen Qi, Junhui Lv, Yirong Wang, Sen Shao,Surgical strategies for peripheral nerve schwannoma based on the intraoperative neurophysiological monitoring, Laparoscopic, Endoscopic and Robotic Surgery, Volume 2, Issue 3, 2019, Pages 65-69,
7. Morales-Maza J, Pastor-Sifuentes FU, Sánchez-Morales GE, Ramos ES, Santes O, Clemente-Gutiérrez U, Pimienta-Ibarra AS, Medina-Franco H. Clinical characteristics and surgical treatment of

schwannomas of the esophagus and stomach: A case series and systematic review. World J Gastrointest Oncol. 2019 Sep 15;11(9):

8. Milenković SS, Mitković MM. Common peroneal nerve schwannoma. Hippokratia. 2018;22(2):91.
9. Zipfel J, Al-Hariri M, Gugel I, et al. Surgical Management of Sporadic Peripheral Nerve Schwannomas in Adults: Indications and Outcome in a Single Center Cohort. Cancers (Basel). 2021;13(5)
10. Muramatsu K, Tani Y, Seto T, et al. Schwannoma in the extremity: clinical features and microscopic intra-capsular enucleation. J Rural Med. 2021;16(4):184-190. doi:10.2185/jrm.2021-020
11. Maleux G., Brys P., Samson I., Sciot R., Baert A.L. Giant schwannoma of the lower leg. Eur. Radiol. 1997;7(7):1031–1034.
12. Kim D.H., Murovic J.A., Tiel R.L., et al. A series of 397 peripheral neural sheath tumors: 30-year experience at Louisiana State University Health Sciences Center. J. Neurosurg. 2005;102:246–255
13. Ritt M.J., Bos K.E. A very large neurilemmoma of the anterior interosseous nerve. J. Hand Surg. (Br.) 1991;16:98–100
14. Vinh Pham Quang, Huy Hoang Quoc, Bach Nguyen, Chuong Ngo Quang, Hieu Nguyen Chi, Ngoc Nguyen, Giant schwannoma on the lower leg: A case report and review of the literature, International Journal of Surgery Case Reports, Volume 109, 2023, 108468,
15. Muramatsu K, Tani Y, Seto T, et al. Schwannoma in the extremity: clinical features and microscopic intra-capsular enucleation. J Rural Med. 2021;16(4):184-190.
16. Woertler K. Tumors and tumor-like lesions of peripheral nerves. Semin. Musculoskelet. Radiol. Nov 2010;14(5):547–558.
17. Hilton DA, Hanemann CO. Schwannomas and their pathogenesis. Brain Pathol. 2014;24(3):205-220. doi:10.1111/bpa.12125