Simultaneous Median and Ulnar Compression Neuropathy Secondary to a Giant Palmar Lipoma: A Case Report and Review of the Literature

Melih Unal, Engin Demirayak, Baver Acar, Ozkan Kose

1. Orthopaedics and Traumatology, University of Health Sciences, Medical Faculty, Antalya Education and Research Hospital, Antalya, Turkey
2. Orthopaedics and Traumatology, University of Health Sciences, Medical Faculty, Antalya Education and Research Hospital
3. Department of Orthopaedics and Traumatology, University of Health Sciences, Medical Faculty, Antalya Education and Research Hospital, Antalya, Turkey

Corresponding author: Ozkan Kose, drozkankose@hotmail.com

Disclosures can be found in Additional Information at the end of the article

Abstract

Lipomas are benign tumors that rarely settle in the hand. They usually present with mass, pain, and nerve compression symptoms. Although isolated median or ulnar nerve compression neuropathy secondary to a lipoma of the hand has been widely reported, simultaneous median and ulnar nerve compression neuropathy are exceedingly rare and there are only three reported cases in the current literature to date. Herein, a case of a 50-year-old woman with a giant palmar lipoma that caused median and ulnar compression neuropathy is presented. The removal of the tumor resulted in the complete recovery of the patient's symptoms. A deep-seated palmar lipoma should be kept in mind in patients with unilateral compression neuropathy symptoms with a palmar mass.

Categories: Plastic Surgery, Radiology, Orthopedics

Keywords: lipoma, median nerve, ulnar nerve, carpal tunnel syndrome, guyon's canal

Introduction

Lipomas are benign soft tissue tumors derived from mature adipose tissue. Theoretically, these tumors may involve every organ throughout the entire body where fat tissue is present. However, the hand is not frequently involved. In a retrospective study of the epidemiology of hand tumors, only 20 (4.9%) out of 402 hand tumors were diagnosed as lipomas [1]. A lipoma of the hand can be located in subcutaneous, subaponeurotic, or intramuscular locations. However, a palmar subaponeuratic lipoma is the most common type of location. In a study that reviewed 18 cases of hand lipoma, 14 (78%) cases were located in the deep palmar area [2]. A deep-seated palmar lipoma may cause nerve compression syndromes when settled in the hand due to the limited space. Even a small-sized lipoma may become symptomatic [3].

Previously, several nerve compression neuropathy cases of the hand secondary to lipomas have been described and published. Most of these cases involved either the ulnar nerve or the median nerve [3-5]. On the other hand, simultaneous median and ulnar nerve compression neuropathy due to lipomas is exceedingly rare and there are only three reported cases in the current literature to date (Table 1) [6-8].
Herein, a further case with simultaneous median and ulnar compression neuropathy secondary to a giant palmar lipoma is presented and discussed.

**Case Presentation**

A 50-year-old female patient presented to our outpatient clinic complaining of numbness in all her fingers and an accompanying mass in her palm. Her complaints lasted for three years but the mass gradually increased in size and numbness deteriorated over the last six months. The patient was otherwise healthy, without any other chronic disease. On physical examination, a palpable rubbery mass both in the thenar and the hypothenar regions of the palm was present (Figure 1).
FIGURE 1: The clinical appearance of the patient’s hand

The clinical appearance of the patient’s hand. Note the mass in both the thenar (red asterisk) and hypothenar (black asterisk) regions of the palm.

Her range of motion of wrist and phalanges was normal. Radial and ulnar pulses were palpable and capillary refill was normal. Median and ulnar nerve motor examination showed normal findings but sensory examination showed hypoesthesia. Phalen’s test and Tinel’s sign on both
the carpal tunnel and Guyon’s canal were positive. The hand radiograph revealed no osseous pathology except that the mass covered her palm (Figure 2).

**FIGURE 2: Radiographs of the hand**

(a) Antero-posterior and (b) oblique hand radiographs show soft tissue shadows in the palmar region (red arrows).

Magnetic resonance (MR) imaging revealed a giant mass that had similar intensity with subcutaneous fat tissue extending to the palm and showing invasion of the Guyon’s canal and the carpal tunnel (Figure 3).
Electromyography showed both median and ulnar nerve entrapment in the wrist. Based on physical examination, neurophysiological examination, and imaging findings, the lipoma causing both median and ulnar nerve compression neuropathy was diagnosed and surgical excision was planned.

Under ultrasound-guided brachial plexus block and tourniquet control, an incision extending to both Guyon’s canal and the carpal tunnel, through the palmar crisis was used. Compression of both the ulnar nerve in the Guyon’s canal and the median nerve in the carpal tunnel was observed intraoperatively (Figure 4).

The mass was totally excised. A histopathological examination confirmed the diagnosis of lipoma. The postoperative period was uneventful and sutures were removed on the 15th day after operation, and active hand and wrist movements were begun. The patient’s symptoms improved gradually and completely recovered at the second-month follow-up. At the final follow-up nine months postoperatively, the patient was free of pain and numbness. A control electrophysiological examination revealed normal findings. The disabilities of the arm, shoulder, and hand (Quik DASH) score was 2.27, with a hand grip strength of 23 kg on the affected side (left) and 28 kg on the contra-lateral side (right) (Figure 5).
The clinical appearance of the patient's hand at the final follow-up (nine months) was normal, with a well-healed incision.
Discussion

The diagnosis of nerve compression syndromes of the upper extremity can usually be made based on typical history and physical examination findings. Additional electrodiagnostic studies may be used to confirm the clinical diagnosis and stage the degree of compression to decide the management strategy. Often, neither direct radiography nor other imaging modalities are ordered to rule out the possible presence of a space-occupying lesion in routine practice. While a subcutaneous lipoma could be identified easily during the physical examination, small-sized and deep-seated lipomas may be hidden and neglected easily. Furthermore, a lipoma may masquerade as thenar or hypothenar atrophy, which is an important physical examination finding in nerve compression syndromes.

Because the lipoma itself is painless, only compression neuropathy symptoms may be present, which is quite similar to a classical median or ulnar nerve compression syndrome. Consequently, the diagnosis may be missed or patients may receive inadequate treatment. Pogonis et al. described a case of carpal tunnel syndrome (CTS) that underwent repeated surgical release of the median nerve due to a missed lipoma [7]. Similarly, De Semet et al. reported another median nerve compression; that lipoma was discovered during the revision surgery in the carpal tunnel syndrome [8].

Conventional or idiopathic carpal tunnel syndrome is usually bilateral. Bagatur and Zorer reported 73% bilateral involvement in their series [9]. However, in case of a space-occupying lesion, the contralateral hand is almost always intact. Bagatur and Yalcinkaya reported two cases of CTS due to occult lipoma, and emphasized the physical examination of the asymptomatic hand and stressed on the importance of imaging studies in patients with unilateral symptoms that are usually not used in CTS [4].

In case of suspicion of a space-occupying lesion as the reason for nerve compression symptoms, imaging studies should be performed for the identification of the lesion. In direct radiography, small-sized lipomas can often be missed, while large lipomas may cause a radiolucent silhouette within the soft tissues. Magnetic resonance imaging (MRI) is the best examination method both for the differential diagnosis of the mass and for surgical planning. It is quite helpful to define mass characteristics and relationships with other anatomical structures [10]. An electrophysiological study is usually nonspecific; increased latency for both motor and sensory nerve conduction supports nerve entrapment neuropathy.

The treatment of a palmar lipoma is the marginal excision of the mass, without leaving a residue, and decompression of the involved nerves. For a complete removal of the mass, extended incisions may be required. Extended carpal tunnel incision is usually sufficient for the excision of palmar lipomas. In addition, a modified Brunner's incision has been utilized in the literature [7]. The surgical incision should be as large as possible, which allows both the complete removal of the tumor and decompression of the affected nerve.

Conclusions

In conclusion, a giant palmar lipoma that causes both median and ulnar nerve compression neuropathy is exceedingly rare in the literature. Particularly in patients with unilateral compression neuropathy symptoms, a physical examination should be performed thoroughly to seek space-occupying lesions of the hand. Further imaging examinations should be ordered.

Additional Information
Disclosures

**Human subjects:** Consent was obtained by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Cavit A, Özcanli H, Sançmiş M, Oçak GA, Gürer Eİ: Tumorous conditions of the hand: a retrospective review of 402 cases. Turk Patoloji Derg. 2017, 34:66–72. 10.5146/tipath.2017.01415
2. Ergun A, Akin A, Sahin MS, Kitis A: Demographic characteristics, anatomical distribution, and clinical presentations of lipomatosis tumors arising from hand and wrist. J Hand Microsurg. 2016, 8:145–149. 10.1055/s-0036-1597090
3. Gan LP, Tan JS: Concomitant lipoma and ganglion causing ulnar nerve compression at the wrist: a case report and review of literature. Ann Plast Surg. 2016, 76:472–473. 10.1097/SAP.0000000000000579
4. Bagatur AE, Yalcinkaya M: Unilateral carpal tunnel syndrome caused by an occult palmar lipoma. Orthopedics. 2009, 52:43775. 10.3928/01477447-20090818-20
5. De Smet L, Bande S, Fabry G: Giant lipoma of the deep palmar space, mimicking persistent carpal tunnel syndrome. Acta Orthop Belg. 1994, 60:334–335.
6. Galeano M, Colonna M, Risitano G: Ulnar tunnel syndrome secondary to lipoma of the hypothenar region. Ann Plast Surg. 2001, 46:83–84.
7. Pagonis T, Givissis P, Christodoulou A: Complications arising from a misdiagnosed giant lipoma of the hand and palm: a case report. J Med Case Rep. 2011, 5:552. 10.1186/1752-1947-5-552
8. Kamath JB, Jayasheelan N, Danda R: Combined median and ulnar nerve compression neuropathy due to lipoma at the wrist. J Hand Microsurg. 2016, 8:59–60. 10.1055/s-0036-1581122
9. Bagatur AE, Zorer G: The carpal tunnel syndrome is a bilateral disorder. J Bone Joint Surg Br. 2001, 83:655–658. 10.1002/1532-1672(200108)83:8<655::AID-BJS445>3.0.CO;2-S
10. Nguyen V, Choi J, Davis KW: Imaging of wrist masses. Curr Probl Diagn Radiol. 2004, 33:147–160. 10.1016/j.cpradiol.2004.01.002