Large Venous Hemangioma of Brachial Plexus

Abstract
In this report, we present a rare case of a vascular brachial plexus tumor. The patient was a 29-year-old woman with the chief complaint of progressive enlargement of a soft tissue mass in the left upper extremity, without any pain or sensory, motor, or neurologic deficits. The soft tissue mass had presented in the left deltopectoral groove eight years ago. However, the patient had not been evaluated in the past eight years and was only recently admitted to a referral hospital. After complete examination, she underwent surgery for a nerve sheath tumor of the brachial plexus.

Keywords: Brachial plexus tumor, peripheral nerve sheath tumor, venous hemangioma

Introduction
Brachial plexus tumor is recognized as a very rare clinical problem. Benign tumors include schwannoma and neurofibroma, whereas malignant tumors include malignant schwannoma, fibrosarcoma, neuroblastoma, as well as metastatic tumors of plexus, such as lymphoma, leukemia, lung cancer, and breast cancer. There is no sex predilection for this tumor,[1] and the age of onset is young adulthood. Further, this type of tumor is more common in patients with von Recklinghausen’s disease.

In patients with brachial plexus tumors, pain tends to be constant and burning, and paresthesia is a common occurrence. Muscle wasting depends on the involved muscle groups in this condition.[1,2] Pain is usually not affected by activity and cannot be relieved even with significant narcotics. Patients with brachial plexus tumors often present with a mass and local or radicular pain.[1,3] Such patients do not generally have neurologic deficits, but in case of neurologic deficits, surgery or biopsy is contraindicated.[4-7]

According to another classification, brachial plexus tumors are divided into benign peripheral nerve sheath tumors (e.g., schwannoma and neurofibroma), benign nonneural tumors (e.g., lipoma and desmoid tumor), and malignant nonneural sheath nerve tumors (e.g., sarcoma). Overall, in soft tissue masses, tumor size, location, mobility, and tenderness to percussion, in addition to the presence or absence of Tinel’s sign, are evaluated.[8]

In paraclinical evaluation of brachial plexus tumors, chest X-ray, neck X-ray for cervical spine involvement, computed tomography (CT) scan, or magnetic resonance imaging (MRI) for delineation of tumor location and anatomy are used. On the other hand, in malignant tumors, metastasis workups, such as abdominal and pelvic CT scans and myelography, are applied. In addition, electrodiagnostic studies and tissue detection are important in this area.[9,10]

Case Report
The patient was a 29-year-old woman, who had presented with a 6 × 8 cm soft tissue mass in the left deltopectoral groove eight years ago. The mass was compatible with a brachial plexus tumor located in the infraclavicular region. It was firm, consistent, and immobile, although it was not painful. There was no tenderness or Tinel’s sign on percussion test. In addition, there was no thrill, bruit, or history of trauma. The only chief complaint of the patient was enlargement of the soft tissue mass. She underwent MRI, ultrasound, and CT angiography, which confirmed juxtaposition with the subclavian artery and brachial plexus.

Hosseinali Abdolrazaghi, Azade Riyahi1, Masoud Rezagholizamenjany2
Department of Hand and Reconstructive Surgery, Sina Hospital, Tehran University of Medical Science, Tehran, 1Department of Occupational Therapy, School of Rehabilitation, 2School of Medicine, Arak University of Medical Science, Arak, Iran
Finally, the patient underwent surgery through classic incision of the infraclavicular brachial plexus. However, the findings during surgery indicated hypervascularity and bleeding, along with adhesion to the brachial plexus, which had invaded the infraclavicular region. The mass was resected completely. There were no neurologic or vascular deficits during the postoperative period. Permanent pathology showed a large venous hemangioma [Figures 1-3].

Discussion
Brachial plexus hemangioma is recognized as a very rare clinical problem. Extraneural brachial plexus hemangioma usually presents with the signs and symptoms of a peripheral nerve sheath tumor. The signs and symptoms include pain, paresthesia, and weakness. Meanwhile, use of nonspecific imaging findings for preoperative diagnosis is difficult.

Brachial plexus hemangioma is usually diagnosed as a sarcoma or peripheral nerve sheath tumor. The final step in paraclinical evaluation is needle biopsy or open biopsy, which can cause some complications; therefore, biopsy results may be confounding. In our patient, fine needle aspiration was performed, which involved fibro-fatty tissues and collagen fibers [Figure 4].[11-13]

Conclusion
Extraneural brachial plexus hemangioma is a very rare condition. If suspected on MRI findings, CT angiography or angiography can be helpful. For reducing the risk of bleeding, especially in patients with a tumor larger than 3 cm on angiography, embolization is very useful [Figure 2].

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.
References

1. Wolfe SW, Pederson WC, Hotchkiss RN, Kozin SH, Cohen MS. Green & Hotchkiss Operative Hand Surgery: The Pediatric Hand E-Book. Elsevier Health Sciences; 2010.

2. Donnelly LF, Adams DM, Bisset III GS. Vascular malformations and hemangiomas: A practical approach in a multidisciplinary clinic. Am J Roentgenol 2000;174:597-608.

3. Neligan PC. Plastic Surgery E-Book: e-Volume Set: Expert Consult-Online. Elsevier Health Sciences; 2012.

4. Gurtner GC, Neligan PC. Plastic Surgery E-Book: Volume 1 Principles. Elsevier Health Sciences; 2017.

5. Marler JJ, Mulliken JB. Current management of hemangiomas and vascular malformations. Clin Plast Surg 2005;32:99-116.

6. Naqvi AH, Alfonso DT, Flores P, Grossman JA, Restrepo R, Alfonso I. Resolution of brachial plexus palsy due to hemangioma after intravenous corticosteroid therapy. J Child Neurol 2008;23:956-8.

7. Huang JH, Zaghoul K, Zager EL. Surgical management of brachial plexus region tumors. Surg Neurol 2004;61:372-8.

8. Huang JH, Samadani U, Zager EL. Brachial plexus region tumors: A review of their history, classification, surgical management, and outcomes. Neurosurg Q 2003;13:151-61.

9. Binder DK, Smith JS, Barbaro NM. Primary brachial plexus tumors: Imaging, surgical, and pathological findings in 25 patients. Neurosurg Focus 2004;16:1-6.

10. Vargas MI, Viallon M, Nguyen D, Beautilieu JY, Delavelle J, Becker M. New approaches in imaging of the brachial plexus. Eur J Radiol 2010;74:403-10.

11. Rutherford RB. Rutherford’s vascular surgery/Cronenwett Jack L, Johnston K. Wayne; associate editors, Richard C, et al. Philadelphia: Saunders Elsevier; 2010. p. 1169.

12. Cronenwett JL, Rutherford RB, Cronenwett JL. Decision making in vascular surgery. Philadelphia: WB Saunders; 2001.

13. Cronenwett JL, Johnston KW. Rutherford’s Vascular Surgery E-Book. Elsevier Health Sciences; 2014.