



Giant Deep Neck Lipoma: A Case Report and Review of the Literature

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Abstract

Lipomas may be located in all parts of the body and may be confused clinically with other soft tissue masses. They infrequently occur in the head and neck. A large neck mass (greater than 10 cm) with a rapid growth rate should raise concerns about a possible malignancy. Surgical excision of a lipoma is often used as the definitive treatment modality and alternative treatments described for lipomas such as liposuction have been described in the literature. In the present study a 39-year-old male presented with an enlarging left neck mass measuring 11 cm × 8 cm that was successfully removed. The surgery produced excellent cosmetic results and no functional impairment. An integrated review of the literature regarding etiology, histopathology, diagnostic and treatment modalities of lipomas is presented.

Keywords: Lipoma; Liposarcoma; Neck mass

Introduction

Lipomas are benign tumors of adipose tissues with an estimated incidence of 10% of all mesenchymal neoplasms [1]. However, only 13% of lipomas occur in the head and neck area, most of which arise in the posterior neck [2,3]. Rarely, they can develop in the anterior neck area, the infratemporal fossa, or in the oral cavity, pharynx, larynx, and parotid gland. Their growth is usually slow and limited. Most lipomas have a diameter of two centimeters and rarely grow beyond ten centimeters [4]. Although lipomas elsewhere in the body are twice as common in females as in males, lipomas in the head and neck region has a more balanced sex distribution [5]. Lipomas are commonly classified based on anatomic location and histology. Benign lipomatous tumors are sub-classified according to histologic features and growth pattern into classic lipomas, fibrolipoma, angioliipoma, infiltrating lipoma, intramuscular lipoma, hibernoma, pleomorphic lipoma, lipoblastomatosis, and diffuse lipoblastomatosis [6,7]. A “giant lipoma” has a size that is greater than 10 cm in at least one dimension or weighs over 1000 grams [6]. Lipomas may be located in all parts of the body and may be classified anatomically as superficial or deep [8]. In the head and neck region, lipomas deep to the platysma or muscles of facial expression are considered deep [9].

The majorities of head and neck lipomas are superficial and occur in the posterior region of the neck. On the other hand, deep lipomas in the anterior neck are rare. Only a few of such cases have been reported in the literature [2,7,10-14]. We report a case of a giant deep lipoma of the anterior neck.

Case Presentation

A 39-year-old Hispanic male was referred to the oral and maxillofacial surgery clinic at Boston Medical Center with a one-year history of progressive left sided neck swelling. The patient reported that the mass had increased in size over the preceding 2 months. He noted occasional left-side neck pain that radiated to the ipsilateral mandible. He denied both odynophagia and dysphagia. His past medical history was significant for asthma, type-two diabetes mellitus, hypertension, and obesity. He weighed 87 kilograms and his height was 167 cm. Clinical examination revealed an indiscrete soft, mobile mass in the left levels I, II, and III of the neck. There was no skin involvement, skin fixation nor lymphadenopathy. The trachea and thyroid were in the midline. Intra-orally, there was no evidence of tumor or mass. The diagnostic work up included a computed tomography scan

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Received Date: 20 Sep 2016

Accepted Date: 25 Jan 2017

Published Date: 10 Feb 2017

Citation:

Alshadwi A, Nadershah M, Salama A, Bayoumi A. Giant Deep Neck Lipoma: A Case Report and Review of the Literature. *Clin Surg.* 2017; 2: 1299.

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Figure 1: Axial section of the neck CT scan showing a large mass medial to the left sternocleidomastoid muscle.



Figure 2: Coronal section of the neck MRI showing left neck lesion with a signal consistent with fat.

(CT scan), a magnetic resonance imaging (MRI), and a fine needle aspiration cytology (FNAC). The CT scan (Figure 1) and MRI (Figure 2) showed a large mass medial to the left sternocleidomastoid muscle extending from the level of the left mastoid tip to the level of the left clavicle. The lesion extended along the anterior and posterior aspects of the left sternocleidomastoid muscle with a distinct thin capsule and septa. It measured about 8 cm (anterior-posterior dimension) x 6.3 cm (transverse dimension) x 11 cm (cephalocaudal dimension). It was well circumscribed without evidence of invasion of adjacent structures. The mass was homogenous and had a signal consistent with fat on all sequences. It displaced the left common carotid artery and the left internal jugular vein medially without occlusion. The left submandibular gland was also anteriorly displaced. After imaging, a FNAC was attempted twice with inconclusive result. The patient underwent an incisional biopsy under general anesthesia that confirmed the diagnosis of lipoma. This giant lipoma was removed using a transcervical neck incision extending from the left mastoid tip toward the midline, about 4 cm above the sternal notch. The dissection was carried through the skin, subcutaneous fascia, Platysma muscle, and the superficial layer of the deep cervical fascia. A distinct capsule was identified around the lipoma, which facilitated surgical removal. The lesion was dissected bluntly from the internal jugular and common carotid artery without complications (Figure 3).

Histopathology

The surgical resection specimen consisted of grossly tan-yellow



Figure 3: Intraoperative picture of the lipoma showing a close relation to the internal jugular vein.

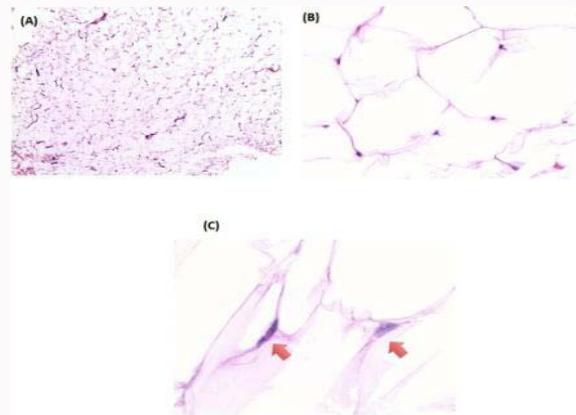


Figure 4: Histopathologic examination of the giant deep lipoma of the neck. Hematoxylin and eosin stain. Original magnifications: (A) 40x, (B) 400x and (C) 600x.

fibro-adipose tissue measuring 10.5 x 9.0 x 4.0 cm and weighing 136.2 grams. Sectioning did not show grossly abnormal areas of hemorrhage or necrosis. Microscopic examination revealed non-encapsulated mature adipose tissue (Figure 4(A); original magnification, 40 \times). Examination at higher magnification demonstrated typical hexagonal arrangement of mature adipocytes (Figure 4(B); original magnification, 400 \times) with eccentrically located small, inconspicuous oval nuclei with open chromatin configuration (Figure 4(C), red arrows; original magnification, 600 \times). No areas with cytologic atypia, immature adipocytes, lipoblasts, necrosis, or other atypical features were seen. These findings, together with the clinical presentation, are consistent with the diagnosis of a benign conventional lipoma. No features suggestive of a specific morphologic variant of lipoma were seen (e.g., angiolipoma or spindle cell lipoma). Focal areas of histologically unremarkable skeletal muscle and 14 benign lymph nodes were also identified in the specimen (not shown), but there was no infiltrative growth pattern or muscle fiber entrapment suggestive of an intramuscular lipoma.

Discussion

Despite the benign nature of lipomas, the distinction from well-differentiated liposarcomas can be challenging [11,15]. A rapidly growing neck mass should raise suspicion of a malignancy [11]. Moreover, the mass size, location, consistency and attachment to adjacent tissues are useful for differentiating a benign from malignant mass. Liposarcomas are usually located in the retroperitoneum, buttocks, lower extremity muscles, or mediastinum. They are

typically found in deeper soft tissues rather than in the subcutaneous areas [16]. However, only 2-8% of liposarcomas occur in the head and neck region [17,18]. Well-differentiated liposarcoma is low grade in nature and can be divided into three subtypes, with the lipoma-like liposarcoma (the most common) mimicking the lipoma both macroscopically and microscopically [18].

Diagnostic imaging, including computed tomography scan or magnetic resonance imaging, is an essential step in the evaluation of the neck mass. Simple lipomas are discrete, encapsulated, and homogeneous [19]. Although, morphologically indistinguishable from normal fat, lipomas' lipids are not available for metabolism. It is usually surrounded by a thin fibrous capsule. On MRI examination, the more differentiated the liposarcoma, the more intense the fat signal is. MRI findings suggestive of liposarcoma include thickened or nodular septa (typically thicker than 2 mm), associated non-adipose masses, and prominent foci of high T2 signal and prominent areas of enhancement [20].

Nonetheless, CT and MRI cannot confidently differentiate lipomas from liposarcomas. Thin capsule of the lipoma may be perceived as an ill-defined border that blends with the surrounding tissues thus mimicking liposarcoma [21]. Moreover, simple lipomas may also contain muscle fibers, blood vessels, fibrous septa, and/or areas of necrosis or inflammation. All these intralesional non-adipose components can confound the correct imaging diagnosis because they can mimic findings associated with well-differentiated liposarcomas [20].

Histological examination is the only way for differentiating the two entities. However, incisional biopsies are not reliable and many times the final diagnosis is not reached until the lesion is completely removed [17]. Lipomas are composed histologically of mature adipose tissue arranged in lobules, many of which are surrounded by a delicate fibrous capsule [22]. Liposarcomas are histologically described as being similar to lipomas, but with scattered atypical fibroblasts or sometimes signet ring cells present [5]. Other, soft tissue neoplasms that may enter the differential diagnosis include lipoblastoma (of infancy), intramuscular angioma, lipomatosis, myxoma, myxoid liposarcoma, or pleomorphic liposarcoma, but these entities were readily excluded morphologically in the presented case.

Surgical treatment options of lipomas include excision or liposuction-assisted removal. Excision is more commonly used because of its lower recurrence rate. Liposuction-assisted removal may be advocated to avoid the resulting scar and potential damage to adjacent structures during excision. Risks of liposuction include skin irregularities like dimpling, parasthesia, pigmental change, and high risks of recurrence [18]. Simple lipomas recur 5% locally [9]. Recurrence is related to incomplete excision or infiltrative type of lipoma [7,10].

Madelung disease, also known as benign symmetric lipomatosis, is a rare idiopathic disease, mainly reported in Mediterranean and eastern European ethnic groups. It mainly affects middle-aged males (male-to-female ratio is 15:1) with history of alcoholism. Moreover, about 80% of patients with HIV-1 infection treated with a protease inhibitor developed this syndrome [23]. This disease is characterized by multiple non-capsulated lipomas in different body areas resulting in a significant cosmetic deformity. The typical description consists of massive lipomatous deposits around the neck, which gives rise to the classic description of lipoma anulare colli, "buffalo hump" and

"horse collar" [24]. Surgery is the most effective treatment, especially for those with aesthetic deformity and/or significant compression of the aerodigestive tract. However, because these lesions are not encapsulated, complete surgical excision is challenging and may lead to local recurrence [25].

In summary, giant lipomas of the head and neck are uncommon. The surgeon should be able to differentiate benign lipomas from liposarcomas. Diagnostic aids include CT scan, MRI, FNAC, and open biopsy. Surgical excision is the preferred treatment with low recurrence rates.

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