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Unusual locations of lipoma: differential diagnosis of head and neck mass

Background

Lipomas are the most common benign neoplasm of mesenchymal origin and may arise in any location where fat is normally present. In the head and neck region, where only 13% of lipomas are seen, the posterior neck space is the most common site.

Objective

This article describes two cases of lipoma that were unusually located in the parotid gland and in the sternocleidomastoid muscle (SCM).

Discussion

Intraglandular lipoma of the parotid gland should be included as a rare possibility in the differential diagnosis of tumours involving the parotid gland. The extent of surgery should be determined at the time of operation with dual goals of complete mass resection, including normal tissue and facial nerve preservation. Also, intramuscular lipoma of SCM is rare and should not be overlooked in the differential diagnosis. A thorough preoperative clinical, radiological and cytological examination should be performed to prevent recurrences due to incomplete removal of the tumour.

Keywords

lipoma; diagnosis, differential

Case discussion

The most likely clinical diagnosis was pleomorphic adenoma. A computed tomography (CT) scan (*Figure 1*) showed enlargement of the right parotid gland. A well-defined low-density mass was about 1.6 x 2.7 x 2.9 cm with multiple patchy high density in the peripheral portion without significant enhancement in the right parotid gland. The mass did not displace any structures of the parotid gland. The mass was superficially placed in the parotid gland and did not extend beyond the confines of the parotid gland. The mass had an attenuation of -127H.U. The CT findings could suggest a lipoma that had intraglandular features. The patient wanted to know the accurate diagnosis and to solve a mild cosmetic problem so surgical removal of the tumour with facial nerve preservation was performed. Histopathology confirmed the diagnosis of lipoma.

Case 1

A healthy man, aged 58 years, presented with a right cheek mass of 8 years duration. It was a slow-growing, painless mass that was not associated with any overlying skin changes. He did not seek medical advice earlier as the mass was asymptomatic. It did not increase in size with mastication and it was not associated with any facial asymmetry. Physical examination revealed a 2.5 x 2 cm, oval-shaped, well-circumscribed, rubbery, non-compressible, non-tender mass over the right parotid region without extension to the angle of the mandible. The cervical lymph nodes were not palpable and there was no evidence of facial nerve involvement.

Case 2

A healthy man, aged 73 years, presented with a 4-year history of a painless and slowly growing lateral neck mass on the right side. In his medical history, special findings were not detected. Physical examination revealed a 3 cm x 2 cm soft and oval shaped mass on the right side, in the upper portion of the sternocleidomastoid muscle. The skin of the mass showed normal skin colour, and neither erythema nor inflammatory findings in the vicinity was detected. There was no accompanying lymphadenopathy.

Case discussion

CT scans revealed a lobulated, fusiform, well-defined and non-enhancing mass

of 3.2 x 2.1 x 7.5 cm with homogeneous adipose tissue signal density in the right sternocleidomastoid muscle (Figure 2). The mass had an attenuation of -139H.U. The appearance suggested a fatty tumour within the muscle and intramuscular lipoma seemed to be the most likely diagnosis. There were no features of local tissue infiltration but a remote possibility of a malignant degeneration could not be entirely excluded. The patient wanted to have the mass removed for cosmetic reasons and fear of developing cancer. Following a transverse neck incision, subplatysmal flaps were raised. The entire length of the sternocleidomastoid muscle was then exposed. The lesion was excised along with a portion of the sternocleidomastoid muscle with a clearance margin of at least 2 cm. Histology revealed a well-circumscribed nodule encased in the muscle, consistent with adipose tissue.

Discussion

General consideration of lipoma

Lipomas are the most common benign neoplasms of mesenchymal origin and may arise in any location where fat is normally present.¹ Lipomas are composed of mature fatty cells and occur predominantly on the upper back, shoulder and abdomen.^{2,3} In the head and neck region, where only 13% of lipomas are seen,⁴ the posterior neck space is the most common site, but the anterior

neck space is a rare location.^{4,5} Besides frequent aesthetic consequences, clinical symptoms depend on the size, location and rate of growth of the lesion.⁵ The most common presentation of lipoma is a painless, well-circumscribed mass with progression in size over time.⁵ Although the aetiology of lipoma has not been elucidated as yet, heredity, obesity, diabetes, trauma, radiation, endocrine disorder, insulin injection and corticosteroid therapy are occasionally implicated as possible aetiological factors.⁶ Rarely, lipomas can be associated with syndromes such as hereditary multiple lipomatosis, adiposis dolorosa, Gardner's syndrome and Madelung's disease.⁵

Preoperative image studies can be particularly useful in identifying the size, location, and even the histological characteristics of lipomatous lesions.⁷ Ultrasonography can be used as the initial study. The characteristic sonographic appearance is that of an elliptical or rounded mass parallel to the skin surface that is hyperechoic relative to adjacent muscle.⁸ However, because echogenicity is influenced by the volume of nonfat tissue,⁹ it may appear as sometimes iso-echoic¹⁰ or even hypo-echoic.⁹ High resolution CT scan imaging can usually be diagnostic even though magnetic resonance imaging (MRI) shows better definition of soft tissue.¹¹ CT shows a well-encapsulated homogeneous mass with few septations and typically low-attenuation with values of -50 to -150 Housefield units.² MRI presents the typical signal intensity patterns that a black rim is present around the mass clearly defining the borders from the subcutaneous

tissue.^{10,12} Infiltrative margins are not often apparent on CT scanning, but using MRI with fat suppression techniques, this can become more evident.¹³ Most lipomas pose no diagnostic dilemmas. However, when presented with large (>10 cm) or rapidly growing masses, especially in the head and neck region, physicians should be concerned about malignancy. Among various disease entities of differential diagnosis, the main diagnostic dilemma is to distinguish a lipoma from a well-differentiated liposarcoma.⁵

Although most lipomas can be observed without treatment,¹⁴ they need excision if there is diagnostic uncertainty, lack of homogeneity to palpation, large neck mass (>10cm), rapid growth, associated pain, deep-seated locations (intramuscular or intermuscular) or cosmetic concern. Treatment is complete surgical excision, but liposuction can be useful in certain locations such as the face.¹⁴ Liposuction is sometimes preferred as there is less scarring following the procedure but there is higher chance of recurrence, compared with excision.^{15,16}

Intraglandular lipoma (parotid gland)

Although adipose tissue is normally present in the parotid gland, intraglandular lipomas of the parotid gland are rare benign lesions that occur in about 1% of all parotid tumour cases.^{12,17} The typical history of patients with intraglandular lipoma is that of a slowly growing, painless mass over the parotid area, the unilateral swelling of the parotid gland.¹² They might be associated with ductal obstruction leading to sialadenitis, depending on the type of lipoma present.¹⁸

On examination, lipomas are soft compressible masses with normal overlying skin.¹² They often display a positive 'slippage sign' when the fingers are slid gently over the edge of the tumour.^{12,19} These tumours are rarely considered in the differential diagnosis of parotid tumours when initial diagnosis is based on clinical findings.⁶ Before any imaging is performed, the most commonly reported preoperative clinical diagnoses are pleomorphic adenoma and Warthin tumour.²⁰

Fine needle aspiration biopsy (FNAB) is of great value in the diagnostic work-up and the differential diagnosis for parotid mass, but it does not provide sufficient data for diagnosis and its

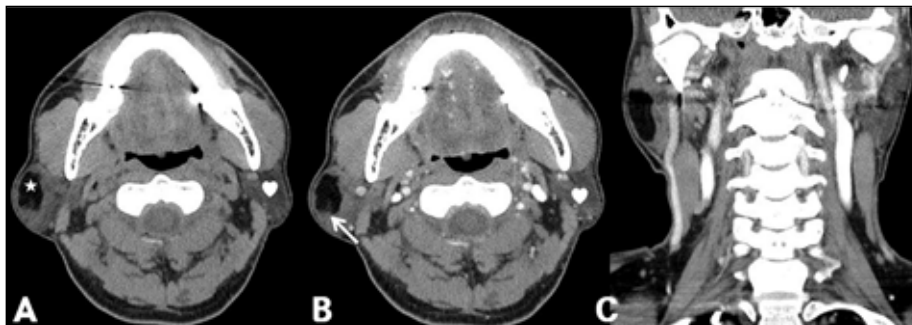


Figure 1. On CT images, a well-defined, low-density mass (asterisk) was about 1.6 x 2.7 x 2.9 cm with multiple patchy high density in the peripheral portion (white arrow) without significant enhancement in the right parotid gland. The mass originated from the superficial lobe of the parotid gland. The normal parotid gland around the tumor was not compressed or displaced by the lipoma and the subcutaneous fat layer was relatively well preserved. A. non-enhanced axial, B. enhanced axial, C. enhanced coronal, heart shape: normal left parotid gland

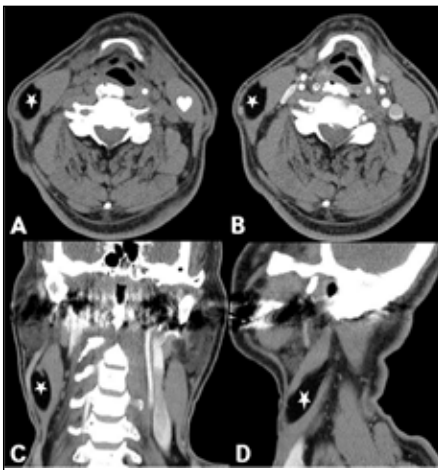


Figure 2. CT scans revealed a lobulated, fusiform, well-defined and non-enhancing 3.2×2.1×7.5 cm-sized mass (asterisk) with homogeneous adipose tissue signal density in the right sternocleidomastoid muscle. A: non-enhanced axial, B: enhanced axial, C: enhanced coronal, D: enhanced sagittal. Heart shape: normal left SCM)

accuracy drops to <50% in the case of lipomatous lesions of the parotid gland.^{12,20,21}

The extent of surgery should be determined at the time of operation with dual goals of complete mass resection (when possible, with a cuff of normal parotid tissue around the mass) and facial nerve preservation.¹² Most clinicians recommend superficial parotidectomy for tumours located within the superficial lobe, with dissection and preservation of the facial nerve and total parotidectomy for deep lobe tumours.¹²

Intramuscular lipoma (sternocleidomastoid muscle)

Lipomas are usually located subcutaneously without infiltrating the adjacent tissues. However, intramuscular lipomas are rare benign tumours that account for 1.8% of all lipomas. These tumours of fat tissues are not confined within the subcutaneous fat layer, but infiltrate the skeletal muscles.²²

Intramuscular lipomas can be divided into the well-circumscribed type and the infiltrative type, on the basis of the appearance of the margins in relation to the adjacent muscle fibres. The infiltrative type, which accounts for 83% of intramuscular lipomas is characterised by margins that irregularly invade the surrounding muscle fibres and, in places, completely replace them.

The well-circumscribed type, on the other hand, is composed solely of a discrete mass of uniform, mature adipocytes that are clearly delineated from the surrounding muscle.²³

Intramuscular lipomas are usually found on the extremity, but rarely occur in the head and neck region.¹ To the best of our knowledge, only four cases of intramuscular lipoma in the sternocleidomastoid muscle have been reported in the literature.^{1,2,22,24} In addition, because important structures are present densely in small spaces of the head and neck region, it is important to establish a preoperative plan by determining the size and location of the tumour through preoperative clinical and radiologic tests.

Clinically, intramuscular lipomas present as slow-growing diffuse masses, arising from the muscle and giving them a rounded appearance.¹ They show the characteristic of becoming soft and flat when surrounding muscles are relaxed; on the other hand, during muscle contraction, they change to a hard round shape, which is of help to differentiate them from other soft-tissue tumours.^{22,25} Lipomas of the sternocleidomastoid muscle are seldom considered in the preoperative differential diagnosis because of their rarity. According to the previous reports, FNAB with sonography may help in making an early diagnosis of intramuscular lipoma, but the results of FNAB can be supported with CT and confirmed with a histopathological report.^{1,2}

The treatment of choice is complete excision after a thorough preoperative clinical and radiological assessment in order to prevent recurrences.^{1,2} However, complete excision can be difficult, given its infiltrating capacity, and thus, unlike a general lipoma, its resection should include adjacent normal muscular tissues including a portion of the attached muscles.^{1,26} Although great differences were shown, depending on the investigators, the recurrence rate of intramuscular lipoma is high, reported to be 3–62.5%.²²

Key points

- Although lipomas are the most common benign soft-tissue tumour in the neck, and the posterior cervical space is the most common site, they can arise in unusual sites such as the parotid gland (intraglandular lipoma) and neck muscles (intramuscular lipoma).

- Intraglandular lipoma should be included as a rare possibility in the differential diagnosis of tumours involving the parotid gland. The extent of surgery should be determined at the time of operation with dual goals of complete mass resection including normal tissue and facial nerve preservation.
- Intramuscular lipoma of sternocleidomastoid is a rare entity and should not be overlooked in the differential diagnosis. A thorough preoperative clinical, radiological and cytological examination should be performed to prevent recurrences due to incomplete removal of the tumour.

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