Ossifying lipoma of the parapharyngeal space: CT and MRI findings

Abstract Ossifying lipomas independent of bone tissue are very rare. A literature review revealed that only a few cases of ossifying lipoma independent of bone tissue have been reported. None of the cases have been reported in the international radiology literature. In addition, there are no reports concerning the MRI features of this entity. We describe CT and MRI findings in a case of ossifying lipoma of the parapharyngeal space.

Keywords Lipomas · Parapharyngeal space · CT · MR imaging

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Introduction

Lipomas are the most common benign tumors of the head and neck. They can undergo a variety of changes, one of which is ossification [1]. Ossifying lipomas are rare and the cases which are independent of bone are exceedingly rare. A review of the literature revealed only nine cases of ossifying lipomas independent of bone tissue [1, 2, 3, 4, 5, 6, 7, 8, 9]. None of the cases have been reported in the international radiology literature. In addition, to our knowledge, the case presented herein is the first case of ossifying lipoma independent of bone tissue studied by MRI.

Case report

A 46-year-old woman presented with slight masticatory disturbance, dysphagia, and paresthesia in the innervation area of the right third branch of the trigeminal nerve. Mild right hypostasia and tinnitus were present also.

On physical examination a small caliper of the right aspect of the nasopharynx without alterations of the pharyngeal mucosa was revealed and a chronic effusional otitis media was diagnosed.

A CT study of the skull base and the neck was obtained by using a Somatom plus 4 scanner (Siemens, Erlangen, Germany) with contiguous 3-mm-thick slices.

Computed tomography demonstrated a 2.5 × 4-cm oval-shaped mass of fat attenuation in the right parapharyngeal space.

There were many bony density elements within the mass; some of them clearly showed a cortical bone rim with a fatty core. A thin layer of soft tissue density surrounded the mass, separating it from
the parapharyngeal space fat. The mass lay from the skull base caudally for 5 cm, determining a camber of the right aspect of the nasopharynx. The pharyngeal mucosa was intact. The skull base underwent osseous bowing. The right oval foramen was not recognized. The middle ear and the mastoid cells were opacified because of the compression of the right Eustachian tube. The mass also determined lateral displacement of the homolateral pterygoid muscles that did not show signs of inflammation or invasion (Figs. 1, 2).

Magnetic resonance imaging was obtained by using a 1.5-T scanner (Magnetom Vision, Siemens, Erlangen, Germany). Axial and coronal turbo-spin-echo T1-weighted (TR/TE: 644/12 ms) and T2-weighted (TR/TE: 5400/99 ms) images with 3-mm slice thickness and a matrix of 512 × 512 were obtained. T1-weighted images with fat suppression (chemsat) were obtained also.

Magnetic resonance imaging demonstrated a well-defined mass which had high signal intensity on T1-weighted images (Fig. 3a) and suppressed signal intensity on fat-suppressed images (Fig. 3b) and T2-weighted images (Fig. 4) similar to that of subcutaneous fat. On MRI all the osseous elements that were seen on CT showed a hypointense cortical line circumscribing a fatty content with signal characteristics similar to that of bone marrow fat (Fig. 3).

The mass was surrounded by a thin line of hypointensity on both T1- and T2-weighted images probably due to fibrous tissue. Minimal stromal septae were seen also.

The patient underwent excision of the mass, which was independent of the skull base. The resected specimen consisted of a capsulated fatty mass. On histological examination it appeared as a combination of mature adipose tissue with fibrous connective strands. Throughout the lesion there were many mature cancellous bone elements without any hematopoietic element.

Post-operative recovery was without complication and the patient will be followed further.

Discussion

Lipomas are benign neoplasms with slow growth that determine mechanical displacement of adjacent structures. Lipomas can undergo a variety of changes, one of which is ossification [1]. It probably depends on the transformation of fibroblasts into osteoblasts determined by an osteoinducing factor released by bloodborne monocytes that enter the fatty tissue [1, 10]. Ossification does not represent a sinister change of the lipoma [1].

Ossifying lipomas are rare and usually associated with bone (osseous lipomas) [11]. A review of the literature revealed only 9 cases of ossifying lipoma independent of bone tissue; all of them occurred in the head and neck region [1, 2, 3, 4, 5, 6, 7, 8, 9]; none of them has been studied by MRI.

To our knowledge, there are no reported reasons to explain why these lesions occur primarily in the head and neck.

We report a case of ossifying lipoma of the parapharyngeal space studied by both CT and MRI.

The most frequent lesions of the parapharyngeal space are deep-lobe parotid masses, minor salivary gland lesions, neureomas, and glomus tumors [12, 13]. When a mass of the prestyloid compartment of the parapharyngeal space is demonstrated (posterior displacement of the internal carotid artery) and a primary salivary gland tumor is excluded (presence of a fat plane between mass and parotid gland), minor salivary gland lesion is the most frequent diagnosis [12]. Minor salivary gland tumors appear as solitary, ovoid, sharply outlined masses. They are hypovascular tumors with varied at-

Fig. 1 A CT scan that shows an oval-shaped smooth mass of fat density in the right parapharyngeal space determining lateral displacement of the pterygoid muscles (asterisk). Many bone density elements are visible within the fatty mass; some of them show a high density rim with a fatty core (arrowheads). A soft-tissue-density line (arrows) surrounds the mass. Also note the small camber of the right aspect of the nasopharynx.

Fig. 2 A CT scan through the skull base with bone tissue window setting. The mass determines osseous bowing of the greater wing of the sphenoid bone and of the pterygoid process base. Note the sclerosis of the neighboring bone where it is in contact with the mass (arrowheads). The right oval foramen is not recognizable. The Eustachian tube (open arrows) and the mastoid cells are opacified. Arrow indicates left oval foramen.