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Masseter Muscle Hypertrophy - Case Report

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Masseter muscle hypertrophy is characterized by unilateral or bilateral enlargement of the masseter muscles affecting both males and females after puberty. Its etiology remains unknown. Limitations on mouth opening and also tension in the region of the hypertrophied muscle are symptoms reported. This paper reports a case of masseter muscle hypertrophy diagnosed using imaging modalities such as conventional radiography, computed tomography and magnetic resonance imaging scans. The familiarity with this condition is important to settle the differential diagnosis with other pathologies such as parotid gland tumors and dental infection.

Key Words: masseter muscle, hypertrophy, computed tomography scan, magnetic resonance imaging, radiology.

INTRODUCTION

In 1880, a case of bilateral hypertrophy of the masseter muscles and the temporalis muscle was described a in a 10 year-old-girl (1). Although few cases have been documented since then, it has been stated that this disorder is more common than generally recognized (2). It is characterized by unilateral or bilateral enlargement of the masseter muscles and is often accompanied by pain, which may be intermittent and confused with parotid gland swelling (3,4). Anatomically, the masseter muscle is a thick quadrate muscle composed by two layers. It arises from the inferior and deep surface of the zygomatic arch and most part inserts into the inferior lateral aspect of the mandibular ramus (5).

This paper reports a case of masseter muscle hypertrophy diagnosed using imaging modalities such as conventional radiography, computed tomography (CT) and magnetic resonance imaging (MRI).

CASE REPORT

A 31-year-old male patient was referred from the Department of Maxillofacial Surgery to the Department of Oral and Maxillofacial Radiology of the Methodist University of São Paulo for radiographic examination.

Clinical examination revealed a soft unilateral tissue mass over the left body, near the angle of the mandible, which became more prominent when the patient clenched the jaws (Fig. 1). The opening and closing of the jaws were normal. Midline deviation was observed during occlusion (Fig. 2). There was no history of facial trauma, dental abnormalities or temporomandibular joint clicking. An anteroposterior radiograph was taken. CT scan was performed using Elscint 2000-Sprint CT scanner (Elsinct, Tel Aviv, Israel) using slice thickness of 2.5 mm. MRI was performed using 1.0 Tesla scanner (Magneton Siemens, Erlangen, Germany).

These exams showed a compensatory hypertrophy in the area of muscle insertion due to the increase of the muscle size and tension. Prominence of the mandible angle and bone spur development were detected (Fig. 3). CT and MRI scans showed well-developed left masseter muscle with hypertrophy when compared to the right side. Discreet hypertrophy of the left medial

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and lateral pterygoid muscles was observed (Figs. 4-6).

A written informed consent was obtained for case report and disclosure of photographs, radiographs, MRI and CT scans for scientific purposes.

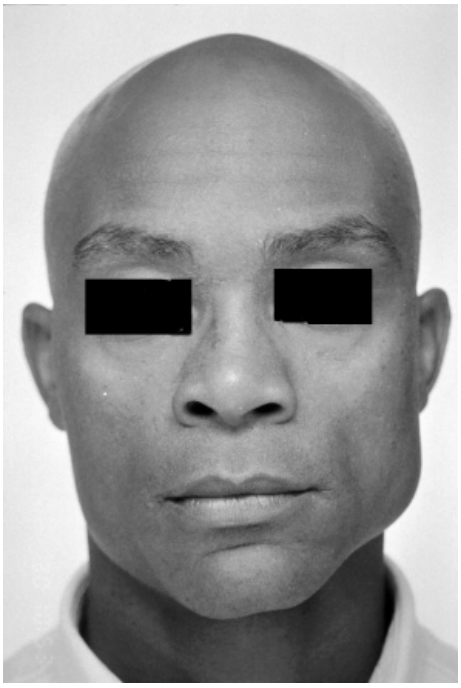

Figure 1. Frontal view showing mandibular left angle prominence.

Figure 2. Intraoral view showing midline deviation during occlusion.

Figure 3. Anteroposterior radiograph showing spur development in the left angle of the mandible.

Figure 4. CT scan showing hypertrophy of masseter muscle.

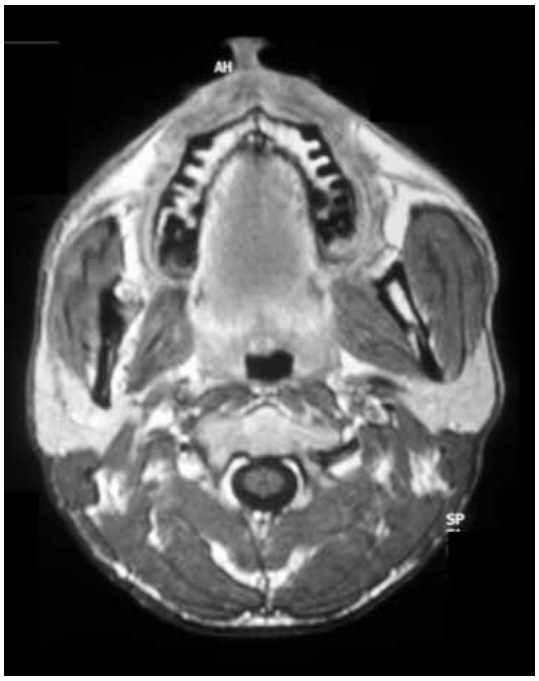

Figure 5. MRI scan confirming the findings of the anteroposterior radiograph and CT scan, showing hypertrophy of the masseter muscle on the left side.

Figure 6. MRI scan showing discreet hypertrophy of the left medial and lateral pterygoid muscles and enlargement of the left masseter muscle.

DISCUSSION

Masseter muscle hypertrophy is an asymptomatic, benign enlargement of one or both masseter muscles. It is a relatively rare condition, with around 130 cases reported in the literature since the first described. It is most commonly seen in late adolescence and early adulthood. The findings of a previous study (6) showed that out of 90 patients 4% were less than 10 years old and 3% were over 40. The remaining patients had a mean age of 30 years. Fifty-seven percent of the patients were male and 43% were female.

There are several theoretical considerations about the etiology of masseter muscle hypertrophy, but it sill remains unclear. Several authors claim that emotional stress results in chronic forceful clenching of the jaws and bruxism, which cause a work hypertrophy of the muscle (7).

The bone spurs at the mandible angle are commonly associated findings and they can be observed in the anteroposterior radiograph (Fig. 3) in this case report. However, Bloem and Hoof (8) stated that approximately 20% of normal people have this finding and that it cannot be considered a diagnostic aid. Guggenheim and Cohen (9) reported that bone spurs are caused by periostal irritation and new bone deposition responding to increased forces exerted by the muscles bundles. CT is an established method of providing many pieces of information about landmarks and surrounding structures. CT scanning is indispensable in case of masseter muscle hypertrophy with bone flaring, due to its high-quality imaging of bone structures and direct bone imaging, which is not possible with MRI because cortical bone produces no significant signal (10). In this case report, however, CT was not able to limit the boundary between medial and lateral pterygoid, and also the hypertrophied portion. On the other hand, MRI facilitated the diagnosis at the affected side because muscular structure signals are more intense, making it easier to compare the affected and non-affected sides.

The differential diagnosis included parotiditis, parotid tumor, lipoma, benign or malignant muscle tumors, vascular tumors, benign and malignant mandible tumors. The correct diagnosis is more difficult in unilateral cases and requires a differential diagnosis with parotid gland alterations, which justifies the need of performing a sialography in order to discard this possibility (11,12).

Therapy for masseteric enlargement is usually unnecessary. Non-surgical modalities of treatment include reassurance, tranquilizers or muscle relaxants, psychiatric care and injection of very small doses of botulinum toxin type A (13). Dental restorations and occlusal adjustments to correct premature contacts and malocclusions are important. Parafunctional habits must be prevented. In this case, patients may undergo a cosmetic surgery to reduce the bone prominence from the mandibular angle (14).

Masseter muscle hypertrophy is a benign condition that usually does not require surgical intervention. Misdiagnosed cases due to lack of familiarity with this entity may lead to unnecessary biopsies, explorative surgeries and even radiotherapy for suspected parotid tumors. Conventional radiography exam, CT and MRI scans are helpful to discard other pathologies (15).

RESUMO

A hipertrofia dos músculos masseteres caracteriza-se aumento uni ou bilateral dos músculos masseteres, atingindo igualmente homens e mulheres depois da puberdade. Sua etiologia é desconhecida. Os sintomas incluem limitação da abertura bucal e tensão na região dos músculos hipertrofiados. Este artigo apresenta um caso de hipertrofia de músculo masseter, com várias modalidades imagens, tais como radiografia convencional, tomografia computadorizada e ressonância magnética. É muito importante um conhecimento profundo desta condição para estabelecer o diagnostico diferencial de outras patologias, como tumores da glândula parótida e infecção dental.

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