Bilateral Masseter and Internal Pterygoid Muscle Hypertrophy: A Diagnostic Challenge

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Key Words

Masseter muscles hypertrophy · Bilateral facial swelling

Abstract

Objective: To describe an unusual case of bilateral masseter and pterygoid muscle hypertrophy. **Clinical Presentation and Intervention:** A 53-year-old female patient presented with a bilateral, painless swelling at the parotid areas without improvement after using antibiotics/systemic corticosteroids/nonsteroidal anti-inflammatory agents. Her medical history included thyroid nodules, but no dental/occlusal disorders were observed. The initial differential diagnosis included salivary gland/jaw bone/masseter pathology, but the CT/MRI revealed only an increase in the size of the masseter and pterygoid muscles. The patient was informed of the benign nature of the swelling and was advised to discontinue the use of nonsteroidal anti-inflammatory agents. **Conclusion:** The bilateral hypertrophy of masseter muscles should be considered in differential diagnosis in cases of unilateral or bilateral swelling of the parotid or lateral mandible area.

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Introduction

Masseter muscle hypertrophy (MH) including the pterygoid muscles, also referred as idiopathic or benign masseter hypertrophy is a rare entity of head and neck pathology, and was first described in 1880 in a 10-year-old girl [1]. MH affects both males and females after puberty [2] and is more frequently found in Asians [3].

It is important to consider bilateral MH in the differential diagnosis with other pathologic entities including parotid gland tumors or nontumorous diseases (autoimmune, infectious or inflammatory conditions), dental and jaw pathology, muscle tumors and intrinsic masseter muscle myopathy [2, 4].

Beyond patient information and dental-occlusion improvement, if necessary, surgical intervention may be used for cosmetic reasons and, recently, the use of botulinum toxin type A has been proposed as a preferable therapeutic option [5, 6].

In this report, simultaneous painless bilateral masseter accompanied by pterygoid muscle hypertrophy is described and the literature is reviewed.

Case Report

A 53-year-old female patient was referred for painless swelling of 5 months duration at the parotid and posterior cheek areas bilaterally. There was no history of xerostomia, xerophthalmia or other accompanying general symptoms such as fever and no abnormal laboratory tests. Her medical history included localized osteoarthritis of the right knee, surgically treated 4 years previously, thyroid gland nodules and anxiety. The patient had been on treatment with levothyroxine sodium (for thyroid lesions), statins for control of cholesterol and nonsteroidal anti-inflammatory agents (NSAIDs) including piroxicam and diacerein for 1 year. Due to the improvement of the right knee, the minor gastrointestinal adverse reactions of the NSAIDs and their ineffective action on bilateral facial swelling, the use of these agents was interrupted. In addition to the anti-inflammatory agents, she had undertaken temporal therapy for bilateral facial swelling including antibiotics (azithromycin and clarithromycin) and systemic corticosteroids (prednisolone), also without improvement of the bilateral swelling.

Fig. 1. Bilateral facial swelling.

Clinical examination of the face showed bilateral swelling located at the parotid-posterior buccal area. The swelling was homogenous, firm and solid in palpation. Skin and oral mucosa of the relevant areas were normal and fixed dental prostheses existed bilaterally without any occlusal abnormalities. The habit of chewing gum was not referred by the patient. The initial differential diagnosis included salivary gland, jaw bone or masseter muscle pathology. The CT/MRI imaging revealed a size increase at the external muscle bundles of masseter muscles (mainly on the left side). Interestingly, hyperplasia of internal pterygoid muscle was also seen, especially on the right side. In contrast, the parotid glands, jaws and other head and neck anatomical sites were normal. The thyroid gland was of a normal size with slightly heterogeneous, nonpathologic parenchyma. The patient was informed of the benign nature of the condition and was advised to discontinue the use of NSAIDs.

Discussion

This was an unusual case of bilateral masseter and pterygoid muscle hypertrophy in an anxious, middle-aged woman without obvious muscle or other head/neck pathology. Hypertrophy of the masseter muscles can be either bilateral or unilateral, as reported by Baek [7] (sometimes the temporalis muscle is involved). In our case, the bilateral hypertrophy of masseter was accompanied by internal pterygoid but not temporalis MH. Although the exact causes remain unclear, most commonly, temporomandibular disorders, gum chewing and psychological disorders including anxiety (as in the case in our study) have been considered the main etiological factors [4]. The main pathologies to be considered in differential diagnosis are neoplasms of the parotid glands and mandible as well as lipomas, bone tumors of the middle face, vascular tumors, benign or malignant muscle tu-

Fig. 2. Vertical (a) and horizontal (b) MRI and horizontal CT (c) scanning revealed the bilateral hypertrophy of the masseter muscles (arrows) as well as of the internal pterygoid muscles (circles).

mors, inflammatory processes and bruxism [2, 4]; these were excluded by CT/MRI imaging and physical examination in our case. The combination of imaging, physical examination and an analytical medical record can help in the differential diagnosis. Neurologic tests and electromyograms of the masseter muscles have been reported to be of lesser diagnostic utility [2].

The typical management of bilateral MH includes patient information regarding the benign character of this condition and dental-occlusion improvement, if necessary. Other nonsurgical methods may include psychological support, tranquilizers or muscle relaxants; these were not necessary for our patient after the confirmation of the diagnosis. Surgical treatment was first proposed by Gurney [8], and although this procedure has many risks, many patients seek surgical correction for aesthetic reasons. The possible complications of this procedure include damaging the facial or mandibular nerve, injury of the masseteric artery and consequent bleeding, mandible fracture when rotation instruments are used, infection and trismus after the surgery [9]. Hence, to obviate these

surgical complications, botulinum toxin type A has been considered as a preferable, noninvasive, cost-effective and safer therapeutic option [9]. Botulinum toxin type A is a complex bacterial protein which blocks the neuromuscular transmission through attachment to the presynaptic nerve membrane, providing functional denervation of the muscle and its subsequent atrophy [5]. However, the outcome is temporary because of possible relapse of hyperplasia [10]. Tissue coagulation using radiofrequency energy, a minimally invasive method, has also been considered as an alternative therapeutic option. Its long-term efficacy is under further investigation.

Conclusion

This case showed that this benign condition should be included in the differential diagnosis of diffuse swellings at the parotid area and the mandibles (ramus) in order to avoid redundant diagnostic procedures as well as needless drug administration.

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