

A Rare Association of Bilateral and Unilateral Masseter Hypertrophy with Hypertrophy of Pterygoids

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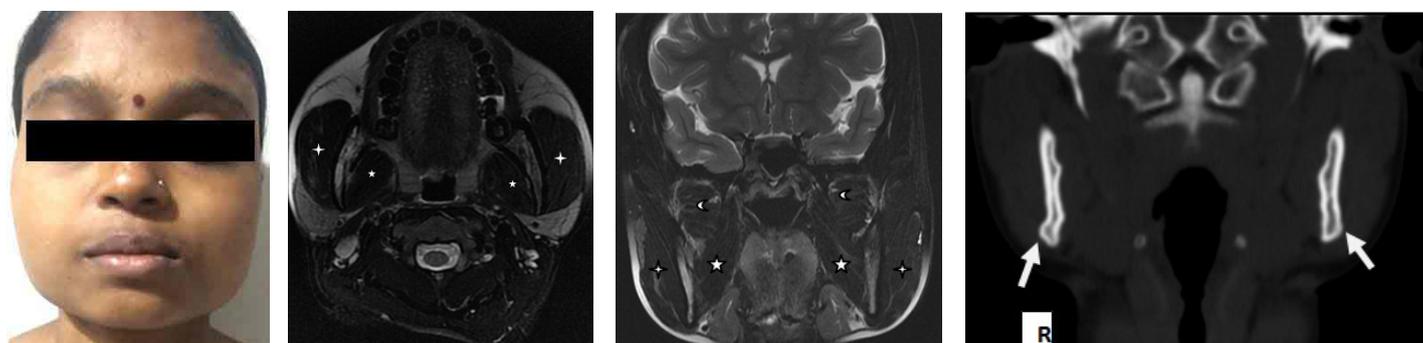
A 20-year-old female patient visited department of maxillofacial surgery with the chief complaints of swelling on either side of the face since 4 years [Table/Fig-1]. The swelling increased gradually in this time period and was first noticed by her relatives. It was non-tender and not associated with pain on jaw movements. She did not give any history of oral habits like tobacco chewing or betel leaf chewing. However, there was history of psychosocial depression. On extra oral examination, mild facial asymmetry was noticed on either side of jaw, measuring size of 5.5 x 6.5 cm in right side and 4.5 x 5.5 cm on left side. Prominence of swelling was noted on clenching of teeth. On intraoral examination, no abnormality was detected. The opening and closing of the jaws were normal. There was no history of facial trauma, dental abnormalities or temporomandibular joint clicking. Based on above clinical features provisional diagnosis of bilateral masseter hypertrophy was given.

Magnetic Resonance Imaging was performed using 1.5 Tesla GE scanner. MRI revealed enlargement of both masseter muscles, bilateral medial and lateral pterygoids [Table/Fig-2,3]. Bilateral

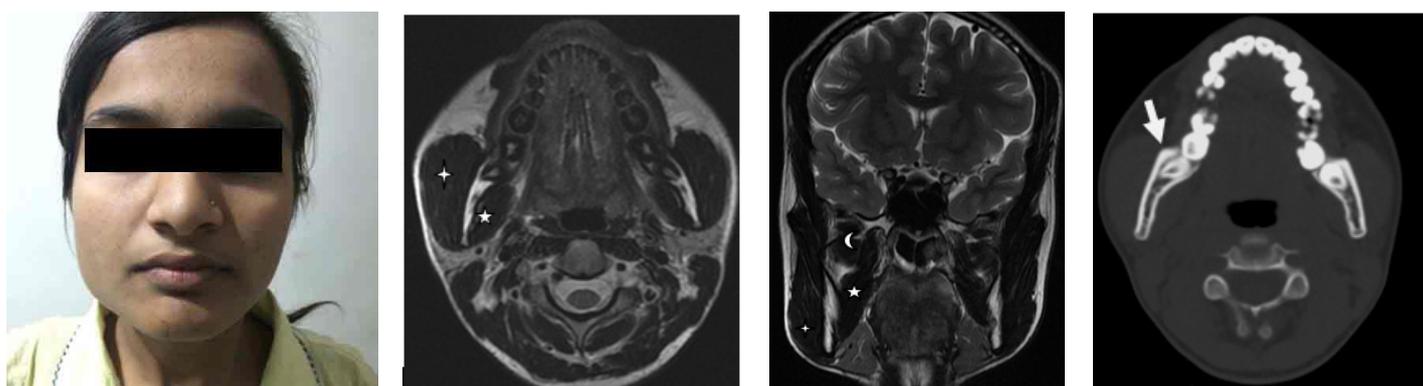
temporal muscles also appeared to be enlarged. All these enlarged muscles were of the same signal intensity as that of the adjacent paraspinal muscles. The muscles were measured in transverse dimension at their maximum transverse bulge. Right masseter measured approximately 21.9mm and left masseter measured approximately 21.3mm. No obvious focal lesion was demonstrated in either of these muscles. Computed Tomography scan was performed using Toshiba 16 slice CT scanner to know bony details. CT study revealed subtle bony spurs on both sides, of right side being more prominent than left side [Table/Fig-4].

CASE 2

A 17-year-old female patient visited OPD of our college and hospital with chief complains of swelling on right side of lower third of face since two years [Table/Fig-5]. She noted that the swelling gradually increased. It was painless swelling and not associated with jaw movements. She did not give any history of tobacco, betel leaf or bubble gum chewing. She gave history of academic stress. On extraoral examination, mild facial asymmetry was noticed on right



[Table/Fig-1]: Frontal view showing bilateral mandibular angle prominence. **[Table/Fig-2]:** MRI axial T2WI, showing enlargement of masseters (4-point star) and medial pterygoid muscles (5-point star) on both sides. **[Table/Fig-3]:** MRI Coronal T2WI, reveals hypertrophied masseters (4-point star), medial pterygoids (5-point star) and superior and inferior heads of lateral pterygoids (moon) on both sides. **[Table/Fig-4]:** CT scan bone window coronal view, shows small bony spurs on both sides, right is more prominent than left (arrows).



[Table/Fig-5]: Frontal view showing unilateral right sided mandibular angle prominence. **[Table/Fig-6]:** MRI axial T2WI, showing enlargement of masseter (4-point star) and medial pterygoid (5-point star) in right side. **[Table/Fig-7]:** MRI Coronal T2WI, reveals hypertrophied masseter (4-point star), medial pterygoid (5-point star) and superior and inferior heads of lateral pterygoid (moon) on right side. **[Table/Fig-8]:** CT scan bone window axial view, shows prominence of right mandibular angle with mild expansion of underlying bone (arrow).

side of lower third of face due to swelling on mandibular angle region. The swelling was 3.5 x 4.0 cm in size with diffuse borders. On palpation, swelling was non tender, soft in consistency, compressible and fixed to the underlying tissues. Based on above clinical findings, a provisional diagnosis of unilateral masseter hypertrophy on the right side was given.

A MRI study was done which showed increase muscle thickness of right sided masseter, medial pterygoid as well as lateral pterygoid muscles [Table/Fig-6,7]. Right masseter measured approximately 18.1 mm in its maximum transverse dimension. Bilateral temporalis muscles was not hypertrophied. A CT scan were also taken which showed prominence of mandibular angle on right side with mild expansion of the underlying bone [Table/Fig-8]. A final diagnosis of unilateral masseter hypertrophy with associated pterygoid muscle hypertrophy on right side was given.

A written informed consent was obtained from both the patients, for disclosure of photographs, MRI and CT scan for scientific purpose. Both these patients were informed of the benign nature of their conditions respectively. The option of botulinum toxin injection was offered to both the patients. But they did not take the treatment. Both the cases reported were not associated with any causative factors for hypertrophy of masseter. So they were included under idiopathic masseter muscle hypertrophy.

Hypertrophy of the masseters was first described by Legg in 1880 [1]. Idiopathic masseter muscle hypertrophy is relatively rare disorder which manifests in adolescence and early adulthood. People of Asian descent are more frequently involved [2]. Around 140 cases of masseter hypertrophy are reported in the literature since the first described. A study by Riefkohl et al., showed that of the total 90 patients 4% were less than 10-year-old, 3% were over 40 and remaining patients had a mean age of 30 years [3]. Fifty seven percent of the patients were male and 43% were female. Our both patients were females and presented in early adulthood.

The aetiology of idiopathic masseter muscle hypertrophy has been attributed to a number of factors such as emotional stress, chronic bruxism, masseteric hyperfunction and microtrauma. The most common of these, bruxism is associated with psychosocial stress, anxiety, malocclusion and sleep disorders [4]. Our first patient complained of psychosocial depression and second patient complained of psychosocial stress due to academic pressure. So the aetiology in both of our cases can be attributed to emotional stress.

Change in the facial appearance is the most frequent complaint of patients. Clinical diagnosis of masseter hypertrophy could be difficult

in unilateral cases and we have to consider differential diagnosis of local infective, inflammatory lesion, vascular tumour, benign and malignant muscle tumours.

Clinical diagnosis of masseter hypertrophy is not possible and various modalities like CT, MRI and ultrasonogram are used to confirm muscle hypertrophy [5]. Very few cases of concurrent occurrence of hypertrophy of medial pterygoids and temporalis muscles has been reported [6,7]. In both our cases, MRI study revealed hypertrophy of medial pterygoids as well lateral pterygoids and masseter muscle. Temporalis muscle hypertrophy was noted in case of bilateral masseter hypertrophy.

In both our cases, MRI has clearly demonstrated the soft tissue features and CT has demonstrated the bony features. Along with masseter hypertrophy MRI and CT also demonstrated medial pterygoid, lateral pterygoid and temporalis hypertrophy, which complemented our diagnosis, thus obviating the need for further invasive investigations.

Bone spurs at the mandibular angles and mandibular angle prominence can be observed in CT study [Table/Fig-4,8] of these cases. Guggenheim and Cohen [8] reported that bone spurs are caused by periosteal irritation and new bone deposition responding to increased forces exerted by the muscle bundles.

Masseter hypertrophy treatment include reassurance, tranquilizers and injection of very small doses of botulinum toxin type A. Surgical treatment include dental restoration, occlusal adjustments, reduction and restoration of prominent mandibular angle. In our cases, counselling was done and option of botulinum toxin injection was offered. Both patients were not ready for surgical treatment.

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FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Aug 05, 2015**

Date of Peer Review: **Oct 24, 2015**

Date of Acceptance: **Dec 22, 2015**

Date of Publishing: **Feb 01, 2016**