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Myositis ossificans of the medial pterygoid muscles: A case report

Masoud Fallahi-Motlagh[a*], Yousef Janbaz[a], Sallahadin Zahedi[a]

a Department of Oral and Maxillofacial Surgery, School of Dentistry, Urmia University of Medical Science, Urmia, Iran

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**Corresponding author:*
Masoud Fallahi Motlagh
No. 1, Hasani Ave., Mokhaberat Square, Urmia, Iran

Tel: +98-4432754981
Fax: +98-4432754981
Email: m_fallahi_m@yahoo.com

ABSTRACT

Myositis ossificans (MO) is a pathologic bone formation in soft tissue with unknown pathogenesis. In this article, we reported a case of long standing MO of right medial pterygoid muscle with severe limitation of mouth opening.

Keywords: Medial Pterygoid Muscles, Myositis Ossificans, Ectopic Ossification, Trismus

Introduction

Myositis ossificans (MO), also known as heterotrophic ossification or ectopic ossification, is a rare pathologic bone formation which occurs in soft tissues that do not normally ossify. The pathogenesis is unknown and the first case reported on the 1740s [1]. It is not common in head and neck region and mostly involves the masseter muscle [2, 3]. In this article, a case of long standing MO of right medial pterygoid muscle with a significant degree of mouth opening limitation is reported.

Case Report

A 46-year-old man was referred to our clinic with severe trismus who had no history of trauma to head and neck region and no medical issues. He had history of severe odontogenic infection 10 years ago. Intraoral examination revealed limitation in mouth opening with 3 mm interincisal distance (ID). Palpation of his temporomandibular joints (TMJ) did not show any problem. Palpation of the masseter and temporalis muscles was normal. A panoramic radiograph showed a calcified region extending from the right pterygoid plate to the sigmoid notch, and there was no obvious TMJ pathology (Figure 1).

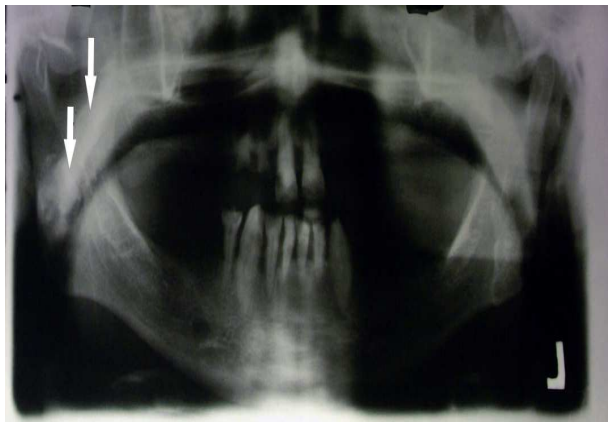

Figure 1. A panoramic radiograph showed a calcified region (arrows) extending from the right pterygoid plate to the sigmoid notch

Computed tomography (CT) scan examination revealed a radiopacity located in the region of right medial pterygoid

muscle that fused the right pterygoid plate to the angle of the mandible (Figure 2).

Three-dimensional (3D) CT showed an ectopic ossification in the right medial pterygoid muscle (Figure 3). Surgery was done under general anesthesia with retrograde nasotracheal intubation. The medial pterygoid region was approached surgically through submandibular incision (Figure 4). A calcified mass within and parallel to medial pterygoid muscle was identified and excised by an osteotome (Figure 5). Intra-operatively ID of 35 mm was achieved with mild resistance. Histopathologic examination of the surgical specimen showed the presence of a distinct zonal pattern composed of immature, loosely textured rich vascular tissue in the inner portion. Ill-defined fibroblasts, osteoblasts and osteoid tissue with mature lamellar bone in the peripheral zone are seen which are surrounded by muscles (Figure 6). After the operation, physical therapy was performed, and maximum opening mouth was recovered to 32 mm. After 6 months follow-up, the patient presented a normal mouth opening.

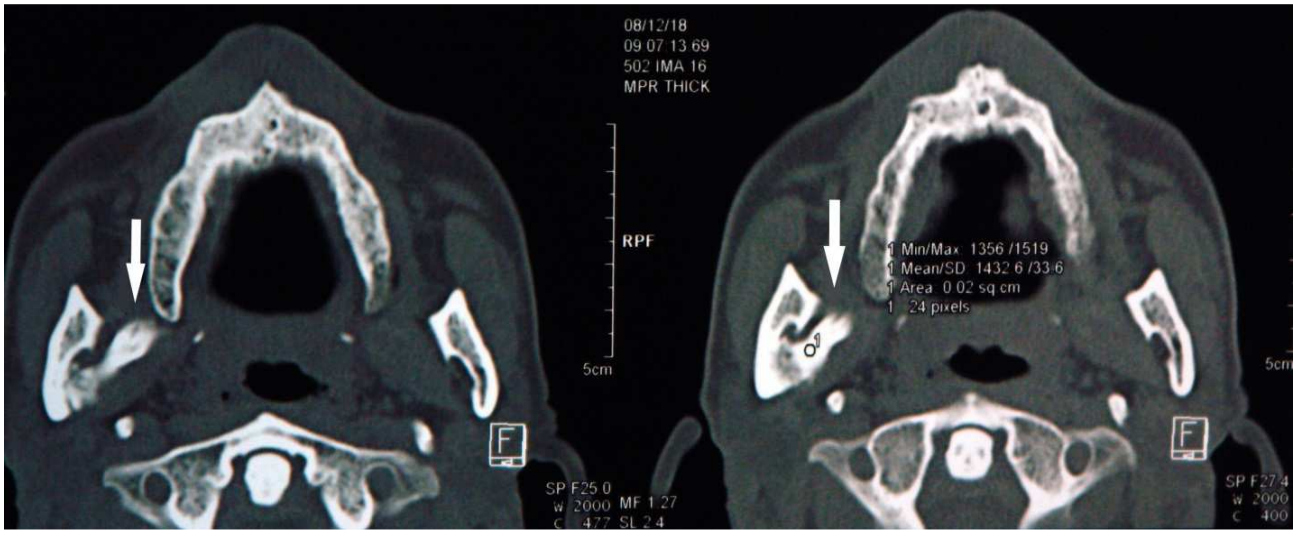

Figure 2. Computed tomography scan examination revealed a bone density mass located in the region of right medial pterygoid muscles (showed by arrows)

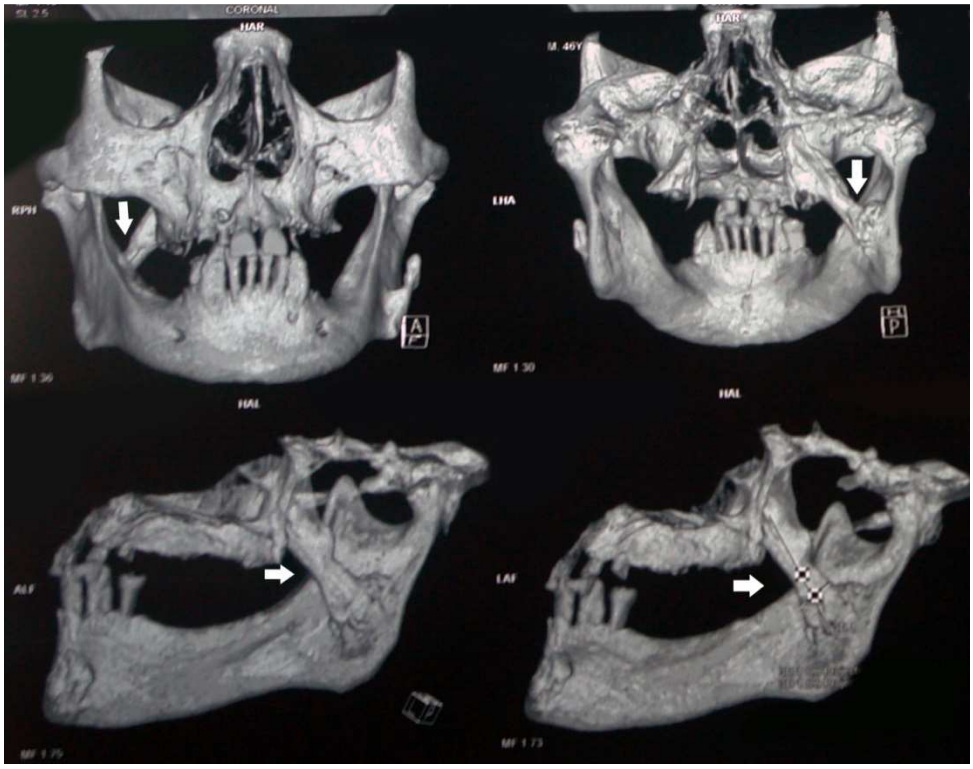

Figure 3. Three-dimensional computed tomography showed an ectopic ossification in the right medial pterygoid muscle (arrows)

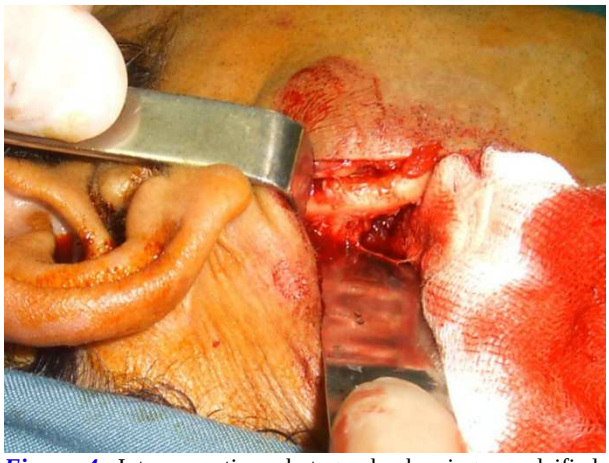

Figure 4. Intra-operative photograph showing a calcified mass medial to the mandibular ramus

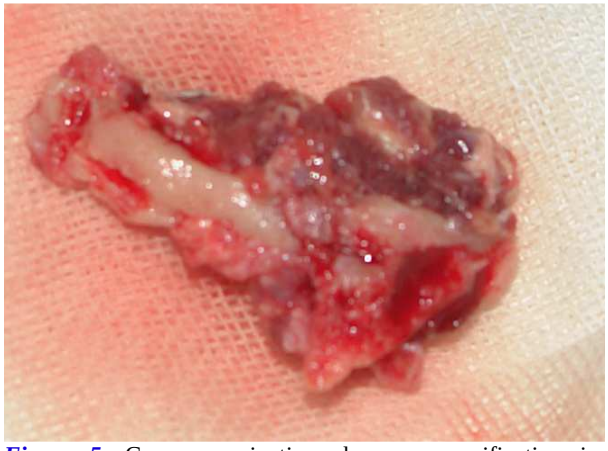

Figure 5. Gross examination shows an ossification in pterygoid muscle

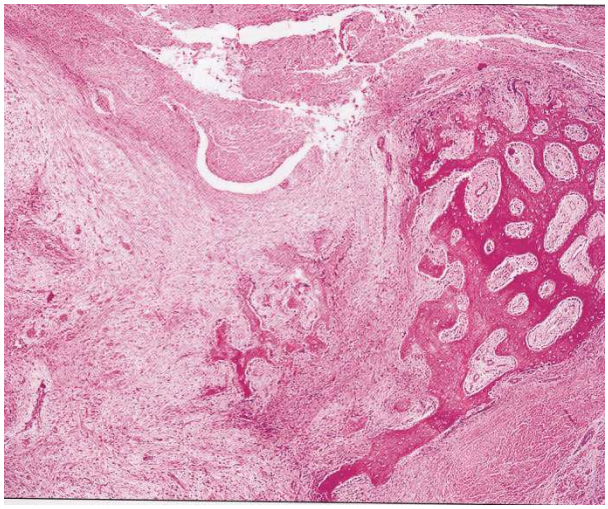

Figure 6. Histopathologic findings reveal the presence of a distinct zonal pattern composed of immature, loosely textured richly vascular tissue with ill-defined fibroblastic, osteoblasts and osteoid tissue

Discussion

MO is a rare disease with the main feature of heterotropic bone formation involving muscles. Recent review of literature divided MO to three subtypes [4-7]:

1. Fibro dysplasia ossificans progressiva (FOP)
2. MO traumatica (MOT)
3. MO atraumatica (MOA).

FOP also called as Munchmeyer's disease is an autosomal dominant disease in which multiple, heterotopic ossifications develop in the systemic muscles, fascia, tendons, and ligaments [4, 5]. It also consists of skeletal abnormalities including microdactyly of first digits, exostosis, and absence of 2 upper incisors [8]. MOP occurs in childhood, and the movement of the joints gradually becomes restricted leading to ankylosis [4, 5]. The prognosis of this type of MO is poor. MOT or non-hereditary MO is an unusual benign disease most frequent found in extremities of young population, in the third decade of their life [9]. It occurs at the site of injured muscle and typically presents with tenderness, pain and limited movement of the affected muscle [9, 10]. Fortunately, MOT is rare in the maxillofacial region. Most of reported cases of MOT which are involving the muscles of mastication occur in masseter muscle [2, 3]. A few cases have been reported to involve the medial pterygoid [11, 12] and four cases affected the temporalis muscle [13, 14]. The masseter muscle is commonly involved because of its position on the facial skeleton, which makes it more prone to traumatic injuries. MOT incidences of the pterygoid and temporalis muscles are rarely reported [15].

In some cases with MO, there is no history of trauma to the muscle so MOA term is used in these cases. Angervall et al. [16] described 5 cases in various anatomic locations that had no history of trauma to affected area. These authors suggested an infectious etiology for this condition. The diagnosis of MO is based on the probable history of trauma and infection, although traumatic injury is reported in 70% of cases; supported by clinical, radiographic and histopathology features [17]. The plain film radiographic examination may often show ectopic bone formation. As described, additional imaging modalities that may be helpful include CT scan, magnetic resonance imaging, and 3D CT scan. It seems that 3D CT scans is the most ideal diagnostic tool in the maxillofacial region. The pathological findings of the MO show ossification of inter-fascicular connective tissue within the muscle. In maxillofacial region, treatment of MOT is complete surgical excision of ossified lesion. MOT of the medial pterygoid muscle is more debilitating and its management is more problematic than the other masticatory muscles [18]. In the present case complete excision of the affected medial pterygoid was done. Other methods of treatment include physical therapy [19], low-doses radiation, non-steroid anti-inflammatory drugs, bisphosphonates, corticosteroids, warfarin, and retinoid [2], but it seems that osteotomy is the best treatment of choice

Conclusion

MO is a rare condition. This condition usually caused by

calcification of an intramuscular hematoma after trauma in the maxillofacial region. It is need to be considered in the differential diagnosis of the patient with trismus.

Acknowledgement

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Conflict of Interest: 'None declared'.

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