Asymptomatic Myositis Ossificans of the Medial Pterygoid Muscles: A Case Report

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Traumatic myositis ossificans, also known as myositis ossificans circumscripta or fibrodysplasia ossificans circumscripta, is a form of dystrophic calcification leading to heterotopic ossification of intramuscular connective tissue. This is usually due to a single severe injury or repeated minor injuries to muscle, although cases without a history of injury have been reported. Heterotopic ossification is rare in the orofacial region, especially in the medial pterygoid muscles. A case of medial pterygoid myositis ossificans with unique computed tomography findings is described.
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A 73-year-old healthy woman presented for routine prosthetic dental care. She reported occasional difficulty swallowing and minor "ear problems." On oral examination, an abnormality was noted in the patient's left posterolateral oral cavity (Fig 1a). Palpation revealed a firm, painless mass without evidence of mucosal ulceration or tissue discoloration. Jaw movement was asymmetrical and restricted, with 10 mm right lateral translation, 15 mm left lateral translation, 10 mm protrusion, and 40 mm ventral opening. No head or neck lymphadenopathy was clinically detected. Prior medical history included complicated tonsillectomy as a young adult and a history of prior multiple, bilateral dental anesthetic block of the mandibular nerves.

Computed tomography (CT) with intravenous contrast was performed on a Somatom DRH scanner (Siemens, Erlangen, Germany), using sequential, 2.0-mm-thick axial scans. The scans revealed bilaterally symmetrical, diffusely increased density of the medial pterygoid muscles, with Hounsfield units of approximately 286, as is consistent with calcification or ossification. No other masticatory muscles were involved (Figs 1b and 1c). This was felt to be a benign process and although the option of biopsy was given to the patient, she declined.

Discussion

Calcifications commonly occur in various pathologic conditions and are usually of three main types: *(1)* dystrophic calcification; *(2)* metastatic calcification; and *(3)* generalized calcinosis. Dystrophic calcification occurs in damaged tissues in the absence of a generalized metabolic derangement. Heterotopic bone formation can occur in the focus of calcification. Metastatic calcification occurs in vital tissues and is related to abnormal calcium or phosphorus metabolism, resulting in hypercalcemia, which has numerous causes.[1] Generalized calcinosis occurs in skin and subcutaneous tis-

Figs 1a to 1c Myositis ossificans involving bilateral medial pterygoid muscles: *(a)* intraoral photograph shows smooth, rounded, submucosal mass projecting from superior aspect of the left posterolateral oral cavity; *(b and c)* contrast-enhanced axial CT (soft tissue and bone windows) demonstrates amorphous increased density of the medial pterygoid muscles bilaterally, with Hounsfield units of 286, consistent with calcification or ossification. There is mild asymmetry of the muscle calcifications with the left slightly greater than the right, correlating with the palpable left mass.

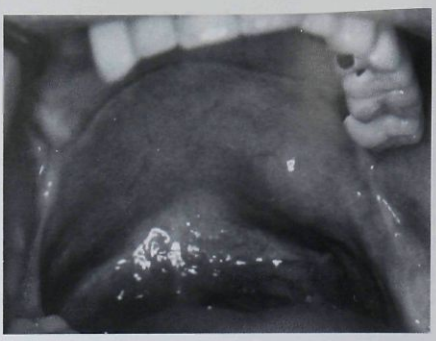

Fig 1a

sue in the presence of normal calcium metabolism and includes connective tissue disorders, idiopathic tumoral calcinosis, and idiopathic calcinosis universalis.[2]

Myositis ossificans is an example of dystrophic calcification that can lead to heterotopic ossification. This entity is not to be confused with myositis ossificans progressiva, also known as fibrodysplasia ossificans progressiva, which is an autosomal dominant disorder resulting in progressive ossification of the connective tissue of voluntary muscles and ligaments in association with skeletal anomalies.[3] Many types of injury in traumatic myositis ossificans have been described, from blunt trauma to infection/inflammation. The mechanism of calcification is unclear, but hypotheses include: traumatization of periosteum with displacement of osteoblasts into muscle, activation of periosteal implants already within muscle, metaplasia of pluripotential intramuscular connective tissue into bone, and metaplasia of fibrocartilage into bone.[3] Within 7 to 10 days after injury, a soft tissue mass develops that may be associated with periosteal reaction of adjacent bone. Flocculent calcifications arise in the mass from 11 days to 6 weeks after trauma. The calcifications gradually enlarge, and in 6 to 8 weeks a lacy pattern of heterotopic new bone is formed around the periphery of the lesion with a more lucent central zone.[2]

Heterotopic localized ossification is rare in the orofacial region. Reviews covering 1945 to 1989 revealed only three cases of medial pterygoid calcification, two of which were traumatic,[4,5] and the third occurred in fibrodysplasia ossificans progressiva.[6] Only two cases involved CT scans. The first case involved a patient presenting with chronic progressive facial pain and restriction of mandibular range of movement. Computed tomography

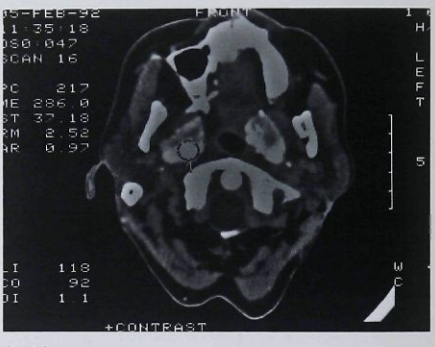

Fig 1b

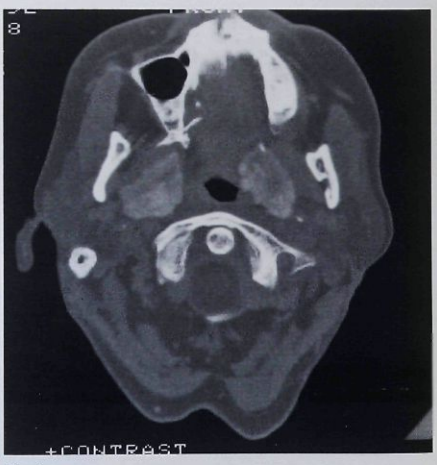

Fig 1c

scans showed a small, round, dense calcification within the right medial pterygoid muscle and an ipsilateral enlargement of the pterygoid process. This was thought to be a case of traumatic myositis ossificans resulting from a series of injections of local anesthesia and alcohol in the region of the mandibular foramen.[5] The second case (attributed to fibrodysplasia ossificans progressiva) demonstrated bilateral, linear, streaklike calcifications within the medial pterygoid muscles.[6]

Definitive etiology of the medial pterygoid calcification could not be pathologically proven in our case. A review of the patient's medical history suggested several possibly related events. She had a history of prior multiple, bilateral dental anesthetic blocks of the mandibular nerves, and it is possible that the anesthetic blocks resulted in intramuscular trauma with hemorrhage and subsequent dystrophic calcification, although the bilaterally symmetrical diffuse involvement would make this unlikely. She also had a history of a complicated tonsillectomy as a young adult, which may have resulted in intramuscular trauma. Other possibilities are that these findings are atypical manifestations of degeneration related to aging or are simply idiopathic.

Certain features make this case unique from previously reported cases. The involvement of the medial pterygoid muscles is bilaterally symmetrical and diffuse. The pattern of calcification on CT was unlike that described in the two previously mentioned cases. A new CT appearance of this entity is therefore demonstrated. Although Reinig et al,[7] in 1986, reported the CT appearance of fibrodysplasia ossificans progressiva, there have been no known studies documenting the CT appearance of myositis ossificans, especially involving the masticatory muscles. Further investigation and clarification are warranted.

Although this process is extremely rare, oral clinicians should be aware of the possibility of medial pterygoid or other masticator muscle calcification or ossification in the evaluation of disorders of mandibular range of movement. The clinical presentation and absence of other medical pathology are helpful in narrowing the differential diagnosis of this radiographic entity. The most important differential diagnosis is a malignant neoplasm, such as an osteogenic sarcoma. Malignant degeneration of myositis ossificans circumscripta into osteogenic sarcoma, although unlikely, has been reported. Lello and Makek[3] recognized that these early cases may have been incorrectly diagnosed as myositis ossificans, resulting in the impression that degeneration had occurred later. Although wide excisional biopsy yields the definitive diagnosis and may also be therapeutic for severe symptoms, it should be recognized that myositis ossificans has a tendency to recur.[3]

References

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Resumen

Reporte de un caso de miositis osificante en los músculos pterigoideos medios

La miositis osificante traumática, también conocida como miositis osificante circunscrita o fibrodisplasia osificante circunscrita, es un tipo de calcificación distrófica que conduce a la osificación heterotópica del tejido conectivo intramuscular. Esto es debido usualmente a una sola lesión severa o a lesiones musculares menores repetidas, aunque también se han reportado casos sin historia de lesión. La osificación heterotópica es rara en la región orofacial, especialmente en los músculos pterigoideos medios. Se describe un caso de miositis osificante del pterigoideo medio, con características únicas suministradas por un examen de tomografía computarizada.

Zusammenfassung

Asymptomatische Myositis ossificans des Musculus pterygoideus medialis: Eine Fallbeschreibung

Die traumatische Myositis ossificans, auch bekannt unter den Bezeichnungen Myositis ossificans circumscripta oder Fibrodysplasia ossificans circumscripta, ist eine Form der dystrophischen Kalzifizierung und führt zu heterotopischen Verknöcherungen des intramuskuläre Bindegewebes. Schuld trägt meist eine einzelne schwerere Verletzung oder aber eine Anzahl wiederholter kleinerer Verletzungen des betroffenen Muskels. Es sind auch Fälle ohne vorangegangene Verletzung beschrieben worden. Im orofacialen Gebiet, insbesondere im Musculus pterygoideus medialis, treten heterotopische Ossifikationen selten auf. Im vorliegenden Artikel wird ein Fall von Myositis ossificans des M. Pterygoideus medialis beschrieben, der einzigartige CT-Befunde zeigte.