Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v30i17.2749

CASE REPORT MYOSITIS OSSIFICANS WITH ARTHRITIS

Dunia Elizabeth Marca Gonzales[1]*, Leidy Azucena Quezada Riofrio[2], Juan Fernando Gálvez Vallejo[3], Álvaro Fernando González Ortega[4]

[1]*Universidad Católica de Cuenca. https://orcid.org/0009-0003-1633-2093,
Email: duniaelizabethmarcagonzales@gmail.com
[2]Universidad Católica de Cuenca. https://orcid.org/0009-0000-8674-0090,
Email: leidyquezada2014@gmail.com
[3]Especialista de II Grado en Reumatología. Profesor e investigador Titular la Habana, Cuba.
Hospital Monte Sinaí, Cuenca, Ecuador. https://orcid.org/0000-0002-8566-4302,
Email: dr.juafgalvez@gmail.com
[4]Especialista en Medicina Interna. Docente de medicina de la Universidad Católica de Cuenca
Hospital Vicente Corral Moscoso. https://orcid.org/0000-0001-7483-6845,
Email: alfernan79@hotma.com

***Corresponding Authors:** Dunia Elizabeth Marca Gonzales
*Universidad Católica de Cuenca. https://orcid.org/0009-0003-1633-2093,
Email: duniaelizabethmarcagonzales@gmail.com

Abstract:
Myositis ossificans is a disease of low prevalence and incidence with variable clinical manifestations with periods of remission and exacerbation as a consequence of its pathophysiological basis characterized by the presence of heterotopic calcifications in soft tissues. Its evolution is progressive with functional limitation of the involved joint, although its morbidity and mortality is low, complications are greater due to diagnostic delay, mainly when associated with rheumatological disease such as rheumatoid arthritis.

Objective: To report updated scientific evidence by describing a clinical case of a patient diagnosed with myositis ossificans associated with rheumatoid arthritis.

Methodology: This study is a bibliographic review approached under a descriptive design of the clinical case report, considering the following sources of information: Science Direct, PubMed, Scopus, Lilacs, Cochrane, Redalyc, SciELO and Proquest.

Results: In the following case, a rare association is described as rheumatoid arthritis overlap syndrome in myositis ossificans, whose clinical picture was characterized by the presence of pain and inflammation at the level of the shoulder and hip joint that improves with activity and worsens with rest plus morning stiffness of one hour.

Conclusions: It should be noted that before a patient with clinical suggestion of myositis ossificans it is important to evaluate the coexistence of other rheumatic diseases such as rheumatoid arthritis, in the current literature this is the first case reported; however, there are other associated pathologies such as osteosarcoma. Although there is no protocolized treatment, the use of bisphosphonate, zoledonic acid and corticosteroids decreases the progression of the disease and improves quality of

life.

Keywords: "Rheumatoid arthritis"; "Myositis ossificans";" Reactive Process"; "Overlay";" Syndrome"; "Trauma."

CHAPTER I

1.1 INTRODUCTION

Myositis ossificans is a rare pathology with an estimated prevalence of 1 per day, 2000000 inhabitants (1). It is usually associated with other bone pathologies, histologically it is characterized by the presence of heterotopic calcifications and ossifications at the systemic level, preferably at the level of muscle, tendons and fascias (2). Clinically, it presents with bone pain that tends to be progressive with periods of remission and exacerbation until it becomes chronic, in the long term it produces physical disability, physical examination usually palpates, hardened and circumscribed areas (3)

The first case was described in 1958, but it was not until 2006 that the mutated gene was isolated, which was located on chromosome 2 (2q23-24) and codon 206, which in normal situations is responsible for ossification, but when mutated predisposes to calcification of soft tissues such as muscle and ligaments (4). Although there is still no recommended pharmacological treatment, the shorter the time between onset of symptoms and diagnosis, the patient can initiate rehabilitation to delay the progression of the disease and consequent disability (5). It is important to have a high clinical suspicion of the disease, to avoid invasive therapeutic procedures, since among the differential diagnoses are bone neoplasms such as osteosarcoma (6). Among the diagnostic methods we have bone scintigraphy, with radiotracer 18-fluordeoxyglucose, which has bone metabolism, in the findings several scattered areas of hyper uptake of osteoblastic characteristics are observed (7).

Rheumatoid arthritis is an idiopathic chronic autoimmune systemic disease that affects the joints, with an incidence between 0.3% and 1.2%, occurs in patients over 20 years of age and young women, although rheumatoid arthritis is usually associated with other systemic diseases such as vasculitis and systemic lupus erythematosus in the present case a syndrome of overlap between myositis ossificans and rheumatoid arthritis is described, case of which there are no reports within the database consulted, reason for the importance of description of the case.

1.2 JUSTIFICATION

Myositis ossificans with rheumatoid arthritis is a rare disease with a prevalence of one in every two million inhabitants (8). Although it was described more than 50 years ago, there is still no protocolized treatment (9). In addition, rare diseases such as myositis ossificans with rheumatoid arthritis, is a research priority within the priority health problems of the Ministry of Public Health of Ecuador, corresponding to the congenital, genetic and chromosomal line subline chromosomal alterations. Therefore, with the data exposed, the analysis and documentation of the case is important because it is considered relevant for future research that addresses this issue in greater depth and compare with similar experiences in other cities and countries, as well as with other treatments recommended in this pathology.

As a personal contribution, the case report will be made to socialize it to the medical staff, with the purpose of the clinical manifestations of the disease, to consider it within the presumptive diagnoses in the case of a patient with progressive limitation plus bone pain

PROBLEM STATEMENT

In the present clinical case, a case of low incidence and prevalence is reported, at present there are 8 confirmed cases of myositis ossificans with rheumatoid arthritis. Being a rare case, the suspected diagnosis and recommended therapeutic proposals are not protocolized. With the exposed data, the case report is important to describe the clinical characteristics of the disease and treatment, with the results it is sought to establish a basis for the future development of therapeutic proposals, in addition to considering myositis ossificans within the discard diagnoses.

CHAPTER II
2.1 RESEARCH OBJECTIVES
2.2 GENERAL OBJECTIVE:
Describe the case of a patient diagnosed with myositis ossificans associated with rheumatoid arthritis

2.3 SPECIFIC OBJECTIVES:
1.To review the literature on myositis ossificans associated with rheumatoid arthritis.
2.To analyse factors for the late detection of myositis ossificans associated with rheumatoid arthritis
3.Compare treatment results reported in the literature with those obtained in the case described

CHAPTER III
3. CLINICAL CASE
3.1 PRESENTATION OF THE CLINICAL CASE
Reason for consultation
We describe the case of a 36-year-old male patient, Ecuadorian, with a history of myositis ossificans, diagnosed by biopsy and genetic analysis, 7 years of evolution, without treatment. He comes for pain and inflammation at the level of shoulder and left hip 8/10 inflammatory type plus limitation of movement of the shoulder and left hip, pain improves with activity and worsens with rest, also refers morning stiffness greater than one hour.

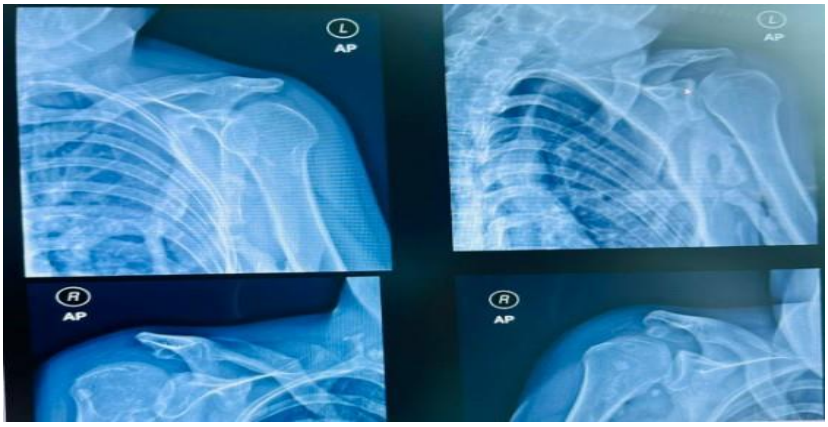
Physical examination: Physical examination, limitation of movement to extension and flexion, in the shoulder, limitation of movement to abduction and adduction. Hip X-ray is performed to confirm diagnosis of ossificant myositis

3.3 COMPLEMENTARY EXAMINATIONS

COMPLEMENTARY EXAMS					
Leukocytes	4.5	**5-10**	**PCR**	>5	**0.2-1**
Neutrophils	43	**50-70**	**ESR**	>10	**0-15**
Lymphocytes	47	**20-40**	**ANNA**	<1/40	**1:40-1:80**
Monocytes	4	**3-10**	**A VIMETINE**	<20	**<1/40**
Eosinophils	6	**1-4**	**Rheumatoid F**	<20	**<1**
Basophils	0	**0.3-1**	**VITAMIN D**	Casualty	**>50**
G.Reds	5.13	**5-10**	**SARS-COV-2**	-	
Hemoglobin	15.4	**14-18**	**INR**	0.91	**0.8-1.2**
Hematocrit	47.2	**30-50**	**TP**	10.9	**12-14**
VCM	92	**82-98**	**TPT**	22.9	**35-45**
HCM	29.8	**26-34**	**Platelets**	230000	**150-400**
Anti CCP	53	**20**			

Imaging tests are performed:

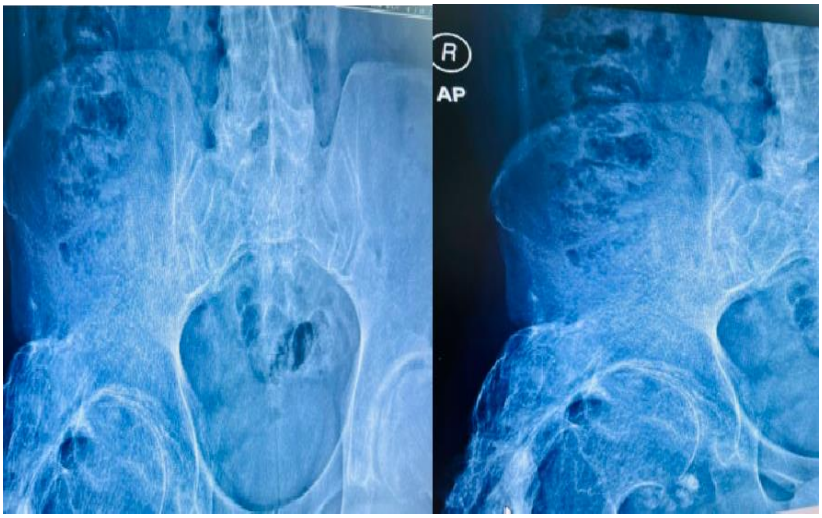
IMAGE NO. 1



Left shoulder bone series

Description: There is evidence of decreased joint surface and calcification of the acromioclavicular ligament.

IMAGE NO. 2



Bone series Left hip

Description: There is evidence of a decrease in the articular surface of the sacroiliac and coxofemoral joints. With the results obtained, the diagnosis of overlapping Myositis Ossificans and Rheumatoid Arthritis is established.

Treatment

It was decided to start treatment with methotrexate 25 g weekly, folic acid 5 mg daily, prednisone 10 mg daily, plus solu-medrol 125 mg monthly plus zoledronic acid 5 g/100 ml.

Tracking

One month after the start of treatment, there was evidence of improvement in inflammatory pain, no morning stiffness, bone pain improved by 50% despite the fact that the functional limitation persists, the patient is self-sufficient for the development of their daily activities.

CHAPTER IV

4.1 DISCUSSION

It should be noted that myositis ossificans has an estimated incidence of 1:2 million inhabitants, worldwide it is estimated that there are about 3000 confirmed cases (11) Myositis ossificans usually occurs between 20 and 30 years of age, in our case it occurred at 36 years of age, cases have been reported at younger ages (12).

Physio pathologically, it is characterized by the presence of heterotopic bone tissue at the level of muscles, tendons and some ligaments, a situation that triggers limitation of ranges of motion (13).
At the histological level there is evidence of the predominance of fibrosis with uninuclear cells that after inflammation tend to sclerose with the consequent formation of a hyaline cartilaginous tissue that progresses to bone generating plates of compact bone, it is important to note that within the histological sections atypical data such as mitosis are not usually evidenced, cell necrosis or atypia, as well as osteoclasts or other data suggestive of malignancy (14).

It has been attributed that the alterations are associated with a mutated gene, located on chromosome 2 (2q23-24) and codon 206, which is normally responsible for ossification, but when mutated predisposes to calcification of soft tissues such as muscle and ligaments (4).

Clinically, the conjunction of all these histopathological findings result in painful episodes of the disease that are usually progressive and accompanied by functional restriction, also when it occurs in Early age is usually found congenital Hallux valgus (95%), large femoral necks, short metacarpal bones (50%), malformations in the cervical spine such as hypoplasia of the vertebral body and ribs, in adults there is usually muscle involvement of the hip and leg muscles mainly in quadriceps and gluteus maximus (15). In the clinical case reported, our patient presented with shoulder pain and considerable limitation of movement, without apparent cause.

The clinical manifestations usually occur for at least 8 weeks, although there is clinical remission, the musculoskeletal involvement worsens, a situation that is evidenced radiographically after the visualization of extraosseous calcifications after 4 weeks, at 6 weeks peripheral calcifications are usually visualized, in addition to the inspection highlights the increase in muscle volume that is not only due to inflammation but also because joint stiffness prevents the redistribution of tissue fluids, which in the long term can generate neuropathic pain due to entrapment and consequently demyelination of the nervous system, causing polyneuropathy and decreased potentials evoked in the electromyogram (16).

Within the complementary tests to establish the diagnosis, these should be performed based on the findings. The use of soft tissue ultrasound and tomography help to evidence heterotopic bone tissue, radiography evidences the loss of the articular surface (17). The use of biopsy is debatable because the histological findings are consistent with osteosarcoma, so there may be diagnostic errors, although the presence of predominance of data that guides the histopathological diagnosis has been highlighted, in addition biopsy by surgery is usually contraindicated by high risk of triggering a new inflammatory episode and progressing the disease (18).

In relation to treatment, it is recommended to use preventive measures such as avoiding soft tissue trauma, a situation that usually forms new heterotopic calcifications, just as the development of surgeries, biopsies and immunizations must be amply justified on the risk benefit (19).

The therapeutic approach should be multidisciplinary, for pain management the use of non-steroidal anti-inflammatory drugs (NSAIDs) is recommended as pain management, although NSAIDs are considered as a second line of treatment, since the main reported is the use of steroids such as prednisone in doses of 2 mg / kg for a maximum of five days 15 and empirically the use of bisphosphonates to reduce the number of outbreaks (20).

Some other therapies are leukotriene inhibitors, thalidomide, COX-2 inhibitors, retinoic acid agonists and pregabalin, without conclusive results, another drug is palovarotene that is in the experimental phase and its mechanism of action is based on inhibiting the progression of inflamed tissue towards heterotopic ossification; Its limitation is that it only acts in the first part of the ossification cascade phase, so its use could be limited (21).

Conclusions:

In the reported case, it should be noted that once the diagnosis of myositis ossificans has been established, the search for a triggering factor is essential, either to limit outbreaks or to give Timely management so that the patient's prognosis is modified and this is benefited.

It should be remembered that in patients with myositis ossificans rehabilitation is the mainstay of treatment and its early onset is of utmost importance, because the dependence of these patients increases rapidly as time passes, since there is no evidence of a curative treatment so far and the only certain thing is that it is impossible to predict the duration or severity of the disease, as well as the speed of clinical deterioration. It should also be noted that myositis ossificans is a pathology of low prevalence, so its knowledge and suspicion are fundamental for the diagnosis. There is little literature involving all three entities; therefore, its pathophysiology and understanding is limited. As for MOP,

there is still no curative treatment; However, the accurate diagnosis allows to initiate rehabilitation through the use of bisphosphonate plus zoledonic acid and the dosage of corticosteroids monthly that will allow in a timely manner with improvement of the quality of life.

REFERENCES

1. Lanuza Lagunilla L, et al. Ossifying myositis in the infant. About a case. Rev Esp Cir Ortop Traumatol (Engl Ed). 2021, Spanish. DOI: 10.1016/J.Recot.2020.05.005.
2. Cruz-Escutia NK, et al. Progressive myositis ossificans: Case report. Rev Med Inst Mex Seguro Soc. 2022. PMID: 35274918.
3. Llanos D, et al. Imaging palpable tumors in pediatrics: Part 2. Radiology (Engl Ed). 2023 DOI: 10.1016/J.RxEng.2023.01.001.
4. Espinosa Muñoz E, et al. Myositis ossificans in elbow mimicking soft tissue sarcoma: Similar clinical and radiological findings. Rheumatol Clin (Engl Ed). 2019. doi: 10.1016/j.rheumatism.2017.05.007.
5. Sánchez Aguilar M, Et al.. Imaging in myositis ossificans: Bone scintigraphy and 18F-fluorodeoxyglucose positron emission tomography/computed tomography. Rheumatol Clin (Engl Ed). DOI: 10.1016/J.Reuma.2017.01.017.
6. Contreras-Olea O, et al. Fibrodysplasia ossificans progressiva plus by a pathogenic variant of the ACVR1 gene: Clinical case [Fibrodysplasia ossificans progressiva. Report of one case]. Rev Med Chil. 2019 doi: 10.4067/S0034-98872019000300384..
7. Moreira C, et al. Fibrodysplasia ossificans progressiva in a 3-year-old female patient. Bol Med Hosp Infant Mex. 2023. doi: 10.24875/BMHIM.22000039.
8. Minoves Font M, et al. Clinical applications of nuclear medicine in the diagnosis and assessment of musculoskeletal sports injuries. Rev Esp Med Nucl Imagen Mol (Engl Ed). 2020 DOI: 10.1016/J.Remn.2019.09.008.
9. Jiménez Zúñiga, et al. "Myositis ossificans of the medial pterygoid muscle secondary to dentigy cyst enucleation: case report." Sanmarquina (2020).
10. Escobar, Et al "Osteomyelitis of non-traumatic myositis ossificans circumscribed in leg: report of a case." CES Medicine 37.1 2023
11. Aziz PAA, Panhwar IA. Fibrodysplasia Ossificans Progressiva in a 5-Year Boy. J Coll Physicians Surg Pak. 2019 Nov;29(11):1129-1130. doi: 10.29271/jcpsp.2019.11.1129. PMID: 31659982.
12. Hsiao EC, Di Rocco M, Cali A, et al. Special considerations for clinical trials in fibrodysplasia ossificans progressiva (FOP). Br J Clin Pharmacol. 2019 Jun;85(6):1199-1207. DOI: 10.1111/BCP.13777.
13. Bai Q, Zou X, Yang G, Fan Y, Wang W, et al. Painful and restricted hip due to myositis ossificans circumscripta of the pectineus muscle after pelvic fracture: A case report. Medicine 2023 doi: 10.1097/MD.0000000000033694.
14. De Brasi D, Orlando F, Gaeta V, De Liso M, et al. Fibrodysplasia Ossificans Progressiva: A Challenging Diagnosis. Genes (Basel). 2021 DOI: 10.3390/genes12081187.
15. Lanuza Lagunilla L, Ramírez Barragán A, Miranda Gorozarri C. Ossifying myositis in the infant. About a case. Rev Esp Cir Ortop Traumatol (Engl Ed). 2021 Mar-Apr;65(2):152-157. English, Spanish. DOI: 10.1016/J.Recot.2020.05.005.
16. Rehman N, Sadashiva H, Madakshira MG, Raman DK. Non-traumatic myositis ossificans. Autops Case Rep. 2021 Aug 20; 11:e2021316. DOI: 10.4322/ACR.2021.316.
17. Malik I, Sharma SC, Padhiyar MA, Rawal N, Mukherjee M. Fibrodysplasia Ossificans Progressiva: A Case Series with Radiologic Findings. J Orthop Case Rep. 2022 Nov;12(11):9-13. DOI: 10.13107/jocr.2022. v12.i11.3394.
18. Devilbiss Z, Hess M, Ho GWK. Myositis Ossificans in Sport: A Review. Curr Sports Med Rep. 2018 Sep;17(9):290-295. doi: 10.1249/JSR.0000000000000515.
19. Gencer-Atalay K, Ozturk EC, Yagci I, Ata P, Delil K, Ozgen Z, Akyuz G. Challenges in the treatment of fibrodysplasia ossificans progressiva. Rheumatol Int. 2019 Mar;39(3):569-576. DOI: 10.1007/S00296-018-4179- X.

20. Jogiya PD, Hind J, Sidhu GAS, Suryawanshi S, Amara VV, Ashwood N. A Rare Presentation of Myositis Ossificans in a Diabetic Individual. J Orthop Case Rep. 2022 Oct;12(10):50-53. DOI: 10.13107/jocr.2022.v12.i10.3362. PMID: 36874884; PMCID: PMC9983389.
21. Pătru S, Pădureanu V, Rădulescu D, Mititelu RR, Pădureanu R, Băcanoiu M, Matei D. A nontraumatic myositis ossificans case of the forearm: Case report and literature review. Exp Ther Med. 2021 May;21(5):531. DOI: 10.3892/ETM.2021.9963