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Case Report

Mycobacterium abscessus Infection in Dermatomyositis with *Calcinosis Cutis Universalis*

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Abstract: Dermatomyositis (DM) is a rare autoimmune condition that may be complicated by calcinosis cutis, particularly in juvenile forms. In adults, extensive calcinosis is uncommon and once it ulcerates, it may lead to recurrent infections. *Mycobacterium Abscessus* is a rapidly growing nontuberculous mycobacterium (NTM) very rarely associated with DM, especially in disseminated infections. We report the case of a 28-year-old female with amyopathic DM and calcinosis cutis universalis who developed disseminated *M. abscessus* infection. The patient presented with cutaneous and pulmonary involvement, and *M. abscessus* was isolated from both skin fistulas and pleural effusion, demanding long-term antibiotic therapy. This is the fourth reported case of *Mycobacterium Abscessus* infection in a patient with dermatomyositis (DM), and the first linked to calcinosis cutis. This case underscores the importance of considering atypical mycobacterial infections in immunosuppressed patients with connective tissue diseases, especially when faced with recurrent or unusual infections. Furthermore, it highlights how skin barrier disruption caused by calcinosis may predispose immunocompromised individuals to such atypical infections.

Keywords: Dermatomyositis; *Mycobacterium Abscessus*; Calcinosis cutis; Nontuberculous Mycobacteria; Immunosuppression.

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1. Introduction

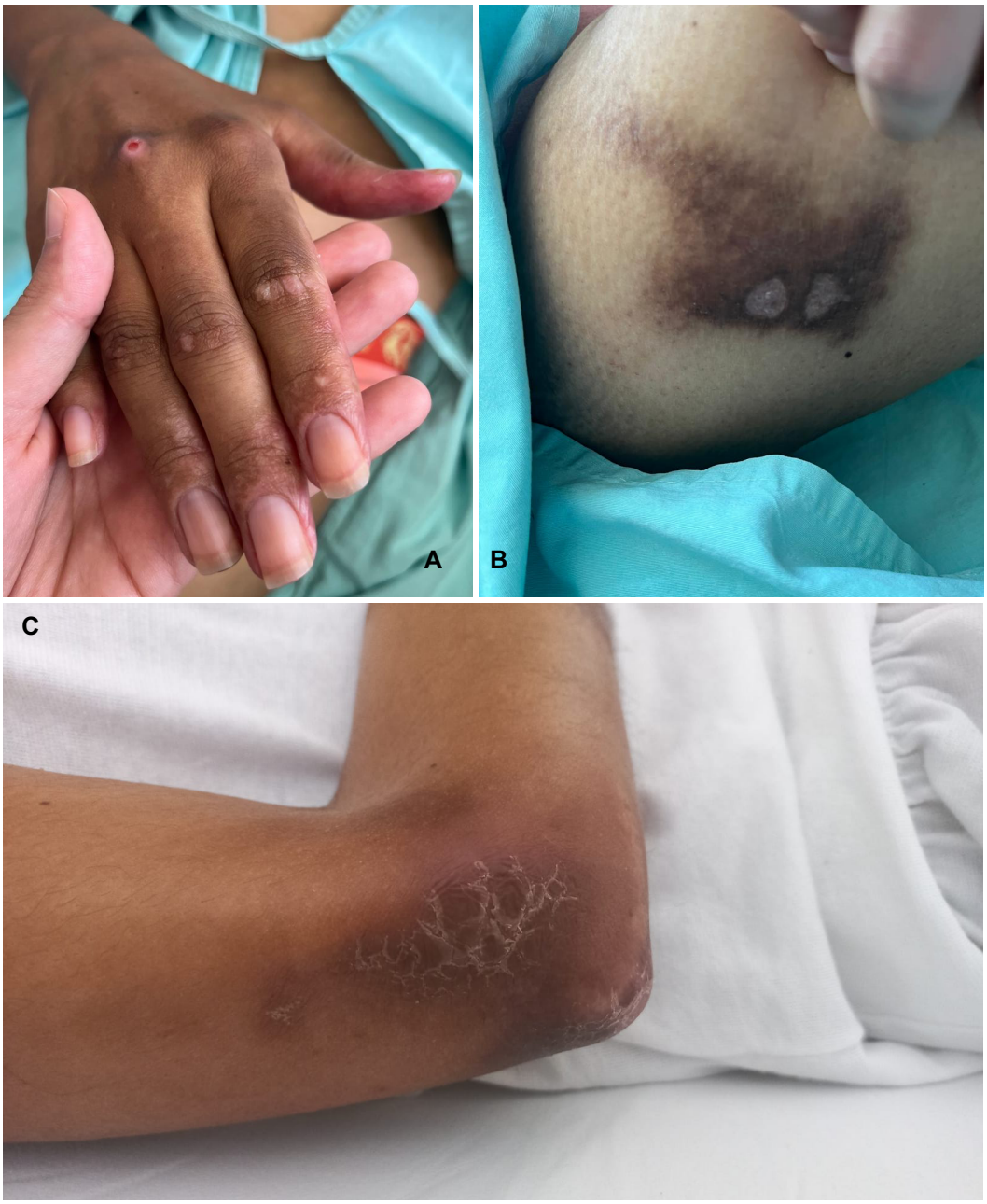
Dermatomyositis (DM) is a rare autoimmune disease characterized by muscle weakness and various skin rashes [1]. Calcinosis is the abnormal deposition of calcium in skin and subcutaneous tissues, being systemic sclerosis and DM the main associated conditions [2]. In DM it is mostly seen in the juvenile form of the disease affecting approximately 20-40% of these patients [3]. In adults, it typically appears in the context of long disease duration, fingertip ulcers, and the presence of autoantibodies against NXP-2 and MDA-5 antigens [2,3]. Calcinosis can lead to complications such as ulcerations, restriction of joint mobility, and recurrent infections of varied etiologies. Very rarely, infections by nontuberculous bacteria, particularly *Mycobacterium Abscessus* can occur in the site of calcinosis.

2. Case Report

A 28-year-old female, manicurist, initiated weight loss of 30 kilograms over the last 8 months, associated with hyperchromic lesions on her lower limbs, breasts, pubis, and hands, along with arthralgia in her hands and knees. She was initially admitted to the hospital Aith cesta pain, fever, and a dry cough, raising suspicion of a respiratory tract

infection. Physical examination revealed pale mucous membranes, alopecia, hyperchromic cutaneous lesions in the aforementioned areas, ulcerative Gottron lesions on her hands (violet or red papules on the extensor side metacarpophalangeal joints of the fingers, although with ulcerated lesions in this case), and multiple hardened cutaneous and subcutaneous plaques suggestive of calcinosis, in her limbs (Figure 1). Additionally, bilateral crackles on auscultation were noted in her lungs. Although she had no muscular weakness at the time of examination, she experienced difficulty in walking due to the pain in her lower limbs.

Figure 1. A. Ulcerative Gottron. B. Hyperchromic area of calcinosis in the right thigh. C. Hyperchromic area of calcinosis in the right elbow.



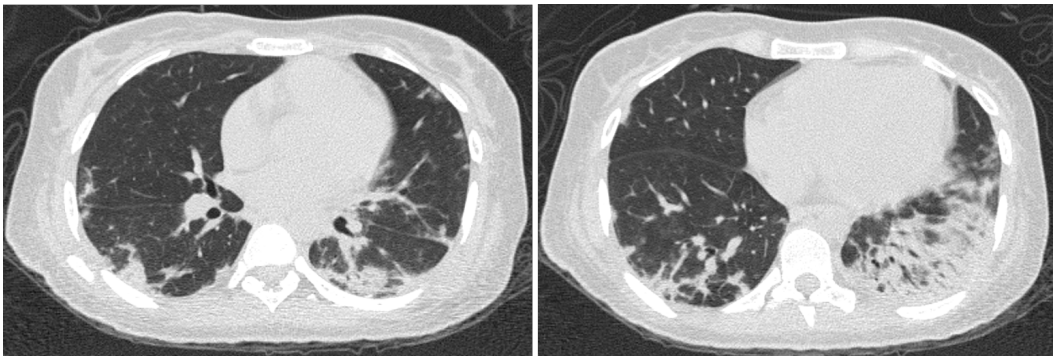
Laboratory workup showed mild hypoalbuminemia, elevated aminotransferases, and canalicular enzymes, with normal creatine phosphokinase levels. Thyroid function

was normal (Table 1). Serology for hepatitis B and C, HIV, HTLV, and syphilis was negative. Chest computed tomography (CT) revealed multiple consolidations in both lower lungs, consistent with cryptogenic organizing pneumonia (COP) (Figure 2). Pulmonary embolism was ruled out by contrast-enhanced CT pulmonary angiography. Abdominal CT scan indicated steatotic liver disease. Electroneuromyography demonstrated asymmetrical myopathic involvement without spontaneous activity, leading to a diagnosis of amyopathic dermatomyositis.

Table 1. Laboratory workup at admission.

	Results	**Normal range**
Haemoglobin (g/dL)	12,1	12-15
Leukocytes (uL)	7.230	4.000-10.000
Platelets (μl)	485.000	150.000-400.000
AST (U/L)	260	5-34
ALT (U/L)	262	0-55
Sodium (mmol/L)	139	136-145
Potassium (mmol/L)	3,7	3,5-5,1
Creatinine (mg/dL)	0,5	0,7-1,2
Urea (mg/dL)	35	15-40
CPK (U/L)	117	30-135
LDH (UI/L)	319	125-220
Aldolase (U/L)	15	<7,6
GGT (U/L)	498	9-36
AP (U/L)	311	38-126
TSH (μl/mL)	2,41	0,35-4,94

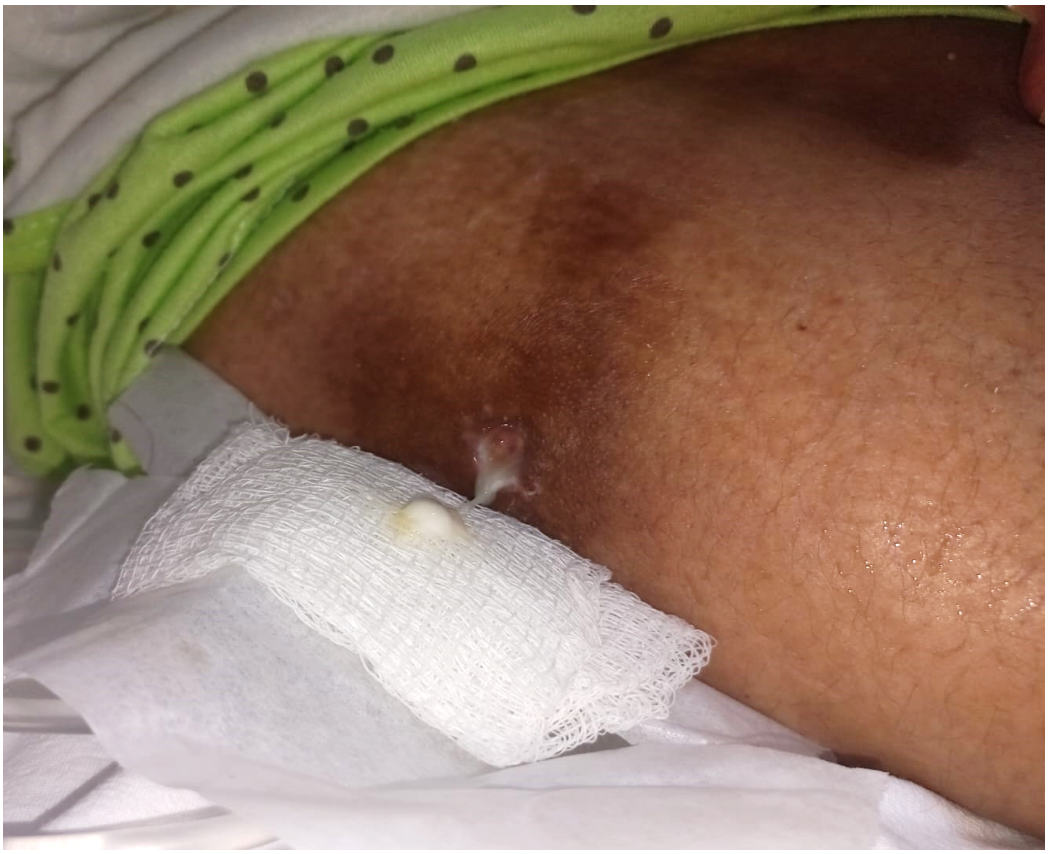
Figure 2. Chest computed tomography showed bilateral pulmonary opacities consistent with a pattern of cryptogenic organizing pneumonia (COP).



Given the clinical findings and test results, a diagnosis of amyopathic dermatomyositis was established. Due to pulmonary abnormalities, she underwent pulse therapy with methylprednisolone (1 g/day for 3 days), and azathioprine (150 mg daily) was started as a corticosteroid-sparing agent. About a week later, she developed marked limb weakness, although CPK levels remained stable. Intravenous immunoglobulin therapy was initiated in response to clinical deterioration, as recommended in refractory cases of inflammatory myopathies, especially given that the patient had undergone corticosteroid pulse therapy one week earlier; however, the outcome was poor.

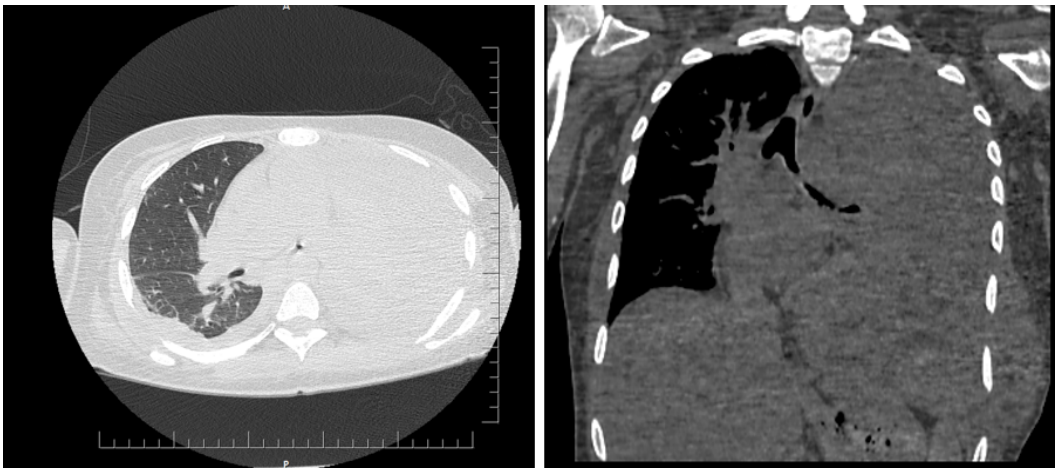
Later on, a month after hospital discharge, she developed a higher-grade fever and articular contractures secondary to the presence of calcinosis cutis universalis. Fistulization occurred at some calcinosis sites (Figure 3). The culture of exudate from the calcinosis site revealed *Mycobacterium Abscessus* and long-term antibiotic treatment with meropenem, azithromycin, amikacin, tigecycline and levofloxacin was initiated. This antibiotic treatment was elected based on the in vitro susceptibility of the organism, as susceptibility testing could not be performed at the treating facility. The treatment regimen considered the potential for macrolide resistance, which is typical of this species, and aimed to avoid acquired resistance to any one agent by using multiple drugs in combination. The planned treatment duration was 18 months.

Figure 3. Area of calcinosis in the right thigh with fistulization.



Despite the initiation of therapy, the patient required multiple surgical drainages of recurrent large subcutaneous abscesses. Approximately a month later, she experienced an episode of dyspnea and oxygen desaturation and a chest CT scan revealed a large left-sided pleural effusion (Figure 4) ipsilateral to a cutaneous abscess located on the back near the scapula, which also required thoracic drainage. Analysis of the pleural fluid through thoracentesis also confirmed the growth of *Mycobacterium Abscessus*.

Figure 4. Massive pleural effusion. Left: axial view. Right: coronal view.



After approximately two months of inpatient treatment with combination antibiotic therapy, the patient showed resolution of the recurrent fever and the formation of new abscesses, as well as normalization of pulmonary function and improvement in the appearance of the calcinosis lesions. She was then transferred to home care to continue intravenous antibiotic therapy and monthly immunoglobulin infusions at 2 g/kg. She maintained clinical improvement with no evidence of adverse effects related to the antimicrobial regimen during sequential follow-ups. In regular outpatient visits, the patient showed significant motor recovery, with no further episodes of fever, calcinosis, or dyspnea. She is already walking unassisted and completing her final months of antibiotic therapy.

3. Discussion and Conclusion

Mycobacteriosis is a well-known infectious, mostly represented by M. tuberculosis and M. leprae. However, nontuberculous mycobacteria (NTM), formerly known as atypical mycobacteriosis, have gained notoriety in medical practice due to the recognition of several immunodeficiency conditions and more sensitive diagnostic techniques [4]. A recent systematic review and meta-analysis highlighted the relevance of mycobacterial infections as a differential diagnosis in immunosuppressed patients with idiopathic inflammatory myopathies (IIM). The study concluded that *Mycobacterium tuberculosis* is the most identified pathogen in this group, with an overall prevalence of mycobacterial infections reaching approximately 3.6%. Importantly, extrapulmonary and disseminated forms were found to be as frequent as pulmonary TB. Although non-tuberculous mycobacteria (NTM) were less prevalent, the review emphasized the need to consider *Mycobacterium Abscessus*, as well as Mycobacterium avium complex, M. chelonae, M. marinum, M. xenopi, and M. peregrinum, particularly due to their intrinsic drug resistance and potential for severe infections in immunosuppressed individuals [5].

Among non-tuberculous mycobacteria, *Mycobacterium Abscessus* is particularly notable for its clinical importance, given its intrinsic resistance to multiple antibiotics and its ability to cause severe disease. It is commonly found in the environment, including sources such as soil, water, and plant material, and has been associated with a wide range of clinical presentations. These include localized skin and soft tissue infections, pulmonary involvement, and disseminated disease, especially in immunocompromised individuals [6, 7].

The challenges related to this group of pathogens lie not only in the difficulty of diagnosis due to non-specific clinical presentation and incomplete identification by most laboratories, but also in the presence of antibiotic resistance, which can be mutational, that is, present in the RNA gene, or inducible, through activation of the erm gene [6]. In our case, in addition to the patient's immunosuppressed state, the calcinosis lesions ulcerated,

allowing secondary infection due to disruption of the skin barrier, which represents the underlying pathophysiological mechanism of infection in patients with calcinosis cutis [2].

A link between *M. abscessus* cutaneous infections and pedicure-related exposures has been described in the literature, which may also apply to our patient given her occupational risk [8]. Transmission is usually caused by trauma of the skin, although cases with no history of trauma have also been described. The pathogen is often found in bathtub water in the nail salons. Zamora et al. described a woman with soft-tissue infection by *M. abscessus* of her finger that progressed to osteomyelitis acquired in a nail salon [9]. Costa-Silva et al. also described a spa worker with soft skin infection by the same agent [10].

Treatment of dermatomyositis (DM) typically involves immunosuppressive therapy, and the development of nontuberculous mycobacterial (NTM) infections is associated with a poor prognosis [11]. In 2018, Noguchi et al. described a patient with DM receiving high doses of prednisolone who developed pleurisy caused by *Mycobacterium Abscessus*. This presentation was similar to our case, although neither calcinosis nor cutaneous abscesses were reported [12]. In 2023, Kim et al. reported a 59-year-old man with dermatomyositis and prolonged immunosuppressant use who developed disseminated soft tissue infection in both thighs due to *M. abscessus*. Spellberg et al. [13] described a male patient with severe dermatomyositis and autoimmune hepatitis on chronic prednisone therapy, who developed disseminated *M. abscessus* infection confirmed by multiple positive cultures from sputum and synovial fluid obtained by arthrocentesis. Treatment in that case was guided by susceptibility testing and included linezolid and clarithromycin [13].

These three reports highlight the vulnerability of immunosuppressed dermatomyositis patients to *M. abscessus* infections, each presenting with distinct clinical features. Compared to these reports, our patient had a more extensive cutaneous burden due to calcinosis, which likely facilitated direct entry of the pathogen through ulcerated areas, a feature not documented in the previous cases. Long-term treatment regimens for *Mycobacterium Abscessus* are often challenging due to antimicrobial resistance, drug toxicity, and the need for prolonged intravenous access [6]. In our case, adherence was facilitated by a multidisciplinary approach and home care support, which likely contributed to the favorable outcome despite the severity of the infection.

To the best of our knowledge, this is the fourth case of *M. abscessus* infection in a patient with DM. It is the first described in association with calcinosis, and the second with pleurisy.

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Research Ethics Committee Approval: Written informed consent was obtained from the patient for the publication of anonymized clinical data and images. The study followed the ethical guidelines established by the Declaration of Helsinki.

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Conflicts of Interest: None.

References

1. Jiang W, Yang H, Li S, Tian X, Wang G. Clinical features, treatments and outcomes of calcinosis in adult patients with dermatomyositis: a single cohort study. Rheumatology (Oxford). 2021;60(6):2958–62.
2. Gutierrez A Jr, Wetter DA. Calcinosis cutis in autoimmune connective tissue diseases. Dermatol Ther. 2012;25(2):195–206.
3. Davuluri S, Duvvuri B, Lood C, Faghihi-Kashani S, Chung L. Calcinosis in dermatomyositis: Origins and possible therapeutic avenues. Best Pract Res Clin Rheumatol. 2022;36(2):101768.
4. Marie I, Hachulla E, Chérin P, Hellot MF, Herson S, Levesque H, et al. Opportunistic infections in polymyositis and dermatomyositis. Arthritis Rheum. 2005;53(2):155–65.
5. Haldule S, Chatterjee M, Goswami RP, Vadsaria I, Gaur P, Kavadichanda C, et al. A systematic review and meta-analysis of mycobacterial infections in patients with idiopathic inflammatory myopathies. Rheumatology. 2022;61(9):3521–33.
6. Huang YC, Liu MF, Shen GH, Lin CF, Kao CC, Liu PY, et al. Clinical outcome of *Mycobacterium Abscessus* infection and antimicrobial susceptibility testing. J Microbiol Immunol Infect. 2010;43(5):401–6.

7. Fukui S, Sekiya N, Takizawa Y, Morioka H, Kato H, Aono A, et al. Disseminated *Mycobacterium Abscessus* infection following septic arthritis. Medicine (Baltimore). 2015;94(21):e861.
8. Stout JE, Gadkowski LB, Rath S, Alspaugh JA, Miller MA, Cox GW. Pedicure-associated rapidly growing mycobacterial infection: an endemic disease. Clin Infect Dis. 2011;53(8):787–92.
9. Gonzales Zamora JA, Villar Astete A. *Mycobacterium Abscessus* felon complicated with osteomyelitis: not an ordinary nail salon visit. Acta Clin Belg. 2020;75(6):429–33.
10. Costa-Silva M, César A, Nuno PG, Azavedo F. *Mycobacterium Abscessus* infection in a spa worker. Acta Dermatovenerol Alp Pannonica Adriat. 2018;27(3):159–60.
11. Kim J, Kim YJ, Park H, Lee S, Yoo DH. Nontuberculous mycobacterial myositis in dermatomyositis with long-term use of immunosuppressant: a case report. Skeletal Radiol. 2024;53(10):2289–96.
12. Noguchi S, Hanami K, Miyata H, Torii R, Shimabukuro I, Kubo S, et al. Pleurisy caused by *Mycobacterium Abscessus* in a young patient with dermatomyositis: a case report and brief review of the literature. Intern Med. 2018;57(7):997–1002.
13. Spellberg B, Yoo T, Bayer AS. Reversal of linezolid-associated cytopenias, but not peripheral neuropathy, by administration of vitamin B6. J Antimicrob Chemother. 2004;54(4):832–5.