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# When the body turns against itself: a significant case of antisynthase syndrome with positive anti-Jo-1

*Quando o corpo se volta contra si: um caso marcante de síndrome antissintetase com anti-Jo-1 positivo*

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KEYWORDS: Dermatomyositis. Myositis. Arthritis. Glucocorticoids.
PALAVRAS-CHAVE: Dermatomiosite. Miosite. Artrite. Glucocorticoides.

## INTRODUCTION

Idiopathic inflammatory myopathies are a group of autoimmune diseases that, although they primarily affect the muscles, often involve other organ systems.[1] There are several subtypes of myositis that course with their own clinical profile. One of the most significant extramuscular manifestations with a prognostic impact is interstitial lung disease (ILD), which is the main pulmonary manifestation in patients with IIM.[1]

Within the spectrum of connective tissue diseases that are associated with ILD, antisynthetase syndrome (ASA) is considered one of the most common variants.[1] ASA is characterized by a constellation of clinical findings, including myositis, fever, Raynaud's phenomenon, "mechanic's hands," arthritis, and, crucially, ILD.[1,2] This syndrome is strongly associated with the presence of antibodies directed against aminoacyl-tRNA synthetases, with the anti-Jo-1 antibody — directed against histidyl-tRNA synthetase — being the most frequently detected.[2]

Myositis is the most classic manifestation of antisynthetasis and is central to the diagnosis.[3,4] The anti-Jo-1 antibody may be present and related to important clinical and prognostic manifestations, especially in pulmonary involvement.[4] The presence of characteristic skin changes (mechanic's hands) is a classic finding whose examination is easily accessible, guiding the physician to search for and treat possible pulmonary involvement early.

The objective of this report was to describe and analyze the clinical case of a patient with antisynthetase syndrome, confirmed by the positivity of the anti-Jo-1 antibody. The report will detail the clinical manifestations presented by the patient, with attention to myositis and skin changes, and discuss the relevance of the anti-Jo-1 antibody as a marker in the antisynthetase syndrome.

## CASE REPORT

This report was approved by the Research Ethics Committee of Faculdade Evangélica Mackenzie - CEP/FEMPAR, Curitiba, PR, Brazil under protocol 7.787.404 and the patient agreed with the description by signing a free and informed consent form.

A 50-year-old man, an auto mechanic, started the condition in November 2024 with inflammatory joint pain in his hands and knees, accompanied by morning stiffness of approximately 30 min. In December 2024, he developed interstitial pneumonia, when he was diagnosed with pulmonary fibrosis. In January 2025, the condition worsened, with the appearance of daily fever, loss of 8 kg and progressive muscle weakness. In May 2025, complaints of erythematous skin lesions on the left arm and abdomen persisted, as well as pain and asymmetric muscle weakness in the lower limbs, which were more pronounced on the right.

The examinations performed revealed the following: 1) standard chest tomography of pulmonary fibrosis with ground-glass opacities and bronchiectasis; 2) spirometry with severe restrictive disorder (FVC 49%, DLCO 44%); 3) elevated inflammatory markers (ESR 38 mm/h, CRP 5.9 mg/dL) with increased CPK (791 U/L) indicating myositis activity; 4) anti-Jo1 antibody with significantly high titer (>200); 5) abdominal ultrasonography with left renal lithiasis and grade II hydronephrosis; 6) Ultrasonography of the wrists revealed bilateral compressive neuropathy.

The patient had serological and clinical markers compatible with antisynthetase syndrome, especially the high-titre anti-Jo1 (>200), which confirms the diagnosis. Cutaneous manifestations included "mechanic's hands", with thickening and fissures in the fingers, as well as erythematous lesions on the arm, left forearm, and abdomen and are considered characteristic of

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this syndrome. Pulmonary involvement was evidenced by interstitial fibrosis on imaging studies (chest CT with ground-glass opacities), whereas muscle weakness (quadriceps 5/5, glutes 4/5) and elevation of CK (791 U/L) and aldolase (5.91) reinforced myopathic involvement.

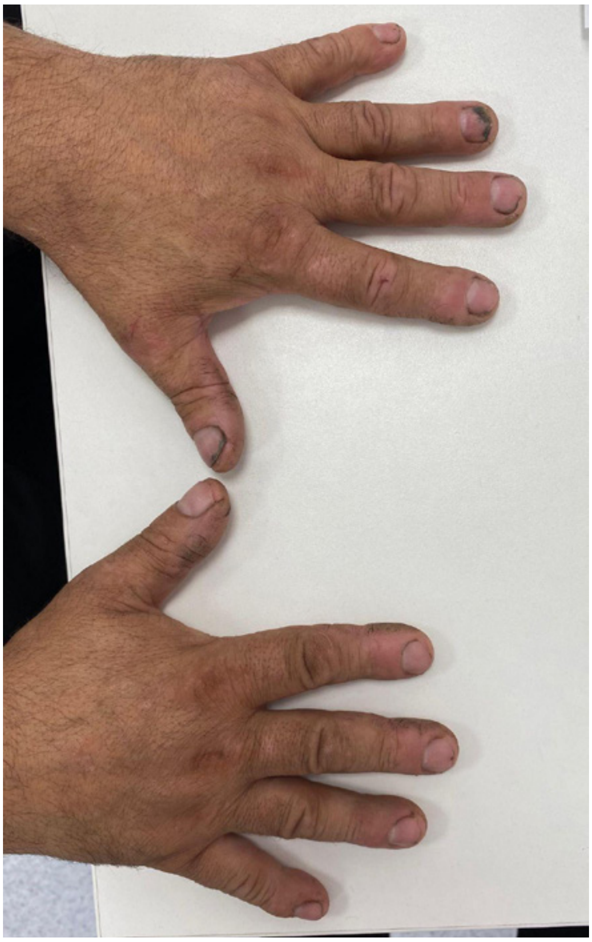

**FIGURE** — Characteristic cutaneous manifestation of dermatomyositis, showing the "mechanic's hands" sign, with hyperkeratosis and fissures in the digital pulps.

The therapeutic approach was based on immunosuppression with mycophenolate mofetil (500 mg 3x/day) and prednisone at high doses (30 mg/day) followed by gradual reduction. In addition, supplements (calcium and vitamin D) were prescribed for the prevention of osteoporosis and physical therapy for muscle rehabilitation. Planning included laboratory monitoring (CK, pulmonary function) and follow-up at the rheumatology outpatient clinic for reassessment.

At the last return visit (05/12/2025), the patient reported subjective improvement; however, he persisted with weakness in the lower limbs and active skin lesions. There was no respiratory worsening, but he remained sedentary due to physical limitations. The reduction in prednisone was tolerated without intercurrences, and mycophenolate was maintained at the dose. Laboratory tests showed inflammatory stability (CRP 3.[7] mg/L), with no additional elevation of muscle enzymes. Continuous follow-up was reinforced for therapeutic adjustment according to clinical response.

## DISCUSSION

The strong interrelationship between amyositis and antisynthetase antibodies (ASA) such as the anti-Jo-1 antibody configures a pathogenic axis of great clinical relevance, since this entity can manifest as a subtype of idiopathic inflammatory myopathies within the ASA spectrum.[1] In this context, the detection of the anti-Jo-1 antibody, the most common antisynthetase antibody in patients with dermatomyositis, acquires significant prognostic importance, since it is closely related to specific clinical manifestations and a higher risk of pulmonary involvement.[2,4]

In this scenario, the identification of classic cutaneous signs, such as "mechanic's hands", becomes a crucial element in the physical examination, functioning as an easily accessible marker that can direct the clinician to the investigation and early management of ILD, an extramuscular complication with the greatest impact on the morbidity and mortality of these patients.[1,3]

The differential diagnosis of autoimmune myositis is broad and should consider its association with malignant neoplasms, which occurs in up to 30% of cases, especially in the first years after diagnosis.[1] The most frequently related tumors include ovarian, lung, breast, colorectal cancer, and non-Hodgkin's lymphomas, with elderly patients and those with severe skin manifestations at higher risk.[1]

In addition to oncological investigation, it is essential to differentiate autoimmune myositis from other conditions that course with muscle weakness and dermatological changes.[1] Among the differential diagnoses, muscular dystrophies stand out, which generally have a slower evolution and a positive family history, as well as metabolic and endocrine myopathies.[1]

Autoimmune necrotizing myopathy, associated with the use of statins and the presence of anti-HMG-CoA reductase antibodies, is another important diagnosis, as it can mimic antisynthetase syndrome in clinical and histopathological aspects, although it typically does not present the characteristic cutaneous manifestations of that of this entity.[1]

For the definitive diagnosis, a combination of clinical criteria, laboratory tests (CK and aldolase elevation), electromyographic and histopathological findings is recommended, and muscle biopsy is essential to demonstrate the typical perivascular and perifascicular inflammatory infiltrate.[5] The search for specific autoantibodies (anti-Mi-2, anti-TIF1γ, anti-NXP2) helps not only in diagnostic confirmation, but also in risk stratification for neoplasms and systemic complications.[5]

The anti-Jo-1 antibody is the most frequent anti-synthetase antibody, being present in 60-70% of cases.[6] This antibody is associated with clinical manifestations such as ILD, myositis, arthritis, and cutaneous involvement, playing a relevant role in the activity and progression of the disease.[7-9]

Studies investigated the relationship between serum anti-Jo-1 levels and ASA activity in 115 antibody-positive patients.[10] The results showed that baseline levels of anti-Jo-1 were lower in patients with ILD at the time of diagnosis compared to those without ILD (122 vs. 158 U/ml, p=0.012), suggesting possible variation in the immune response according to the affected organ.[11,12] On the other hand, higher levels were observed in patients with muscle weakness (168 vs. 122 U/ml, p=0.018), skin involvement (153 vs. 122 U/ml, p=0.009), and arthritis (164 vs. 120 U/ml, p=0.006), indicating a correlation with extrathoracic manifestations.[10]

In longitudinal analyses, variations in anti-Jo-1 levels were shown to be more relevant than absolute values, with significant positive correlations with changes in global disease activity, muscle and lung scores ($p<0.05$). In addition, there was a negative association with pulmonary function parameters (%FVC and %FEV1, $p<0.0001$), reinforcing the potential of anti-Jo-1 as a dynamic marker of organic activity.[6,10] However, baseline levels did not correlate with prognosis, with advanced age and high levels of C-reactive protein being the main risk factors for mortality.

These findings highlight that anti-Jo-1 is more associated with changes in disease activity over time than with initial organic involvement.[10] Therefore, continuous monitoring of the levels of this antibody can offer valuable support for the clinical evaluation and therapeutic management of ASA, especially in patients with pulmonary or muscular involvement.

The prognosis of antisynthetase syndrome is influenced by several factors, including the serologic profile (especially the presence and levels of anti-Jo-1), the severity of pulmonary and muscle involvement, and the response to immunosuppressive therapy. Studies have shown that patients with anti-Jo-1 have a higher risk of progression of ILD, the main determinant of morbidity and mortality in this population.[1,2]

Although anti-Jo-1 is not an independent predictor of mortality, its elevated serum levels (>200 U/mL) are associated with greater overall disease activity and the need for combination therapies.[4] ILD is the leading cause of death, especially in patients with rapid decline in lung function (FVC < 50%).[5]

The prognosis of the patient in question was poor due to the presence of established pulmonary fibrosis and partial response to treatment, but recent clinical stability suggests possible control of the disease with close monitoring. The multidisciplinary approach, including rheumatology, pulmonology, and physiotherapy, is essential to mitigate complications and improve quality of life.

As a final message, the case is highly clinically relevant because it is a patient with antisynthetase syndrome, a rare condition with a potentially severe course. The early identification of specific clinical signs—such as mechanic's hands, proximal myositis, Raynaud's phenomenon, arthritis, and interstitial lung disease—added to positivity for the anti-Jo-1 antibody, allow for timely diagnosis and immediate initiation of immunosuppressive therapy, which was essential for controlling the evolution of the disease and patient survival. In addition, this case reinforces the importance of an interdisciplinary approach and continuous surveillance in the face of possible systemic complications. Interstitial lung disease, which is often associated with antisynthetase syndrome, is one of the leading causes of morbidity and mortality in these patients, which requires regular respiratory function assessment and follow-up with pulmonology.[2,4]

**Authors' contributions**

*Fernanda Nicoly Jobins Jarentchuk – Conceptualization, Formal Analysis*
*Giovanna Jorge Sabino – Methodology, Writing (original draft)*
*Rafaely Cristine Dos Santos - Formal Analysis, Conceptualization*
*Tailine Fontanella Galvani - Formal Analysis, Methodology*
*Thelma Larocca Skare - Project Administration*

## REFERENCES

1. Hochberg MC, et al. Rheumatology. 7th ed. Philadelphia: Elsevier; 2019.
2. Zulfiqar B, Aksionav P, Bittar M, Chapman C. A case of Anti-Jo-1 myositis with unique biopsy findings. Case Rep Rheumatol. 2022;2022:9096643. https://doi.org/10.1155/2022/9096643
3. Li JC, Lai ZH, Shao M, Jin YB, Gao XJ, Zhang K, et al. Significance of anti-Jo-1 antibody's clinical stratification in idiopathic inflammatory myopathy and disease spectrum. Beijing Da Xue Xue Bao Yi Xue Ban. 2023;55(6):958–65. https://doi.org/10.19723/j.issn.1671-167X.2023.06.002
4. Liu CH, Kor CT, Hung MH, Hsiao KH, Cheng YH, Tien YC. Differences in the clinical characteristics and 1-year mortality rates of patients with dermatomyositis with anti-Jo-1 and anti-MDA5 antibodies. J Immunol Res. 2023;2023:2988422. https://doi.org/10.1155/2023/2988422
5. Andrade VP, De Souza FHC, Pinto GLB, Shinjo SK. The relevance of anti-Jo-1 autoantibodies in patients with definite dermatomyositis. Adv Rheumatol. 2021;61(1):12. https://doi.org/10.1186/s42358-021-00171-x.
6. Notarnicola A, Preger C, Lundström SL, Renard N, Wigren E, Gompel EV, et al. Longitudinal assessment of reactivity and affinity profile of anti-Jo1 autoantibodies to distinct HisRS domains and a splice variant in a cohort of patients with myositis and anti-synthetase syndrome. Arthritis Res Ther. 2022;24(1):62. https://doi.org/10.1186/s13075-022-02745-6
7. Lundberg IE, Fugimoto M, Vencovsky J, Aggarwal R, Holmqvist M, Christopher-Stine L, et al. Idiopathic inflammatory myopathies. Nat Rev Dis Primers. 2021;7(1):86. https://doi.org/10.1038/s41572-021-00321-x
8. Connors GR, Christopher-Stine L, Oddis CV, Danoff SK. Interstitial lung disease associated with the idiopathic inflammatory myopathies: what progress has been made in the past 35 years? Chest. 2010;138(6):1464–74. https://doi.org/10.1378/chest.10-0180
9. Nishaikai M, Reichlin M. Heterogeneity of precipitating antibodies in polymyositis and dermatomyositis: characterization of the Jo-1 antibody system. Arthritis Rheum. 1980;23(8):881–8. doi: https://doi.org/10.1002/art.1780230802
10. Yang H, Chen Q, Sun C, Jin Q, Zhang L, Liu Q, et al. Clinical and prognostic associations of anti-Jo-1 antibody levels in patients with antisynthetase syndrome. Respir Res. 2024;25(1):222. doi: https://doi.org/10.1186/s12931-024-02851-w
11. Galindo-Feria AS, Albrecht I, Fernandes-Cerqueira C, Notarnicola A, James EA, Herrath J, et al. Proinflammatory histidyl-transfer RNA synthetase-specific CD4+ T cells in the blood and lungs of patients with idiopathic inflammatory myopathies. Arthritis Rheumatol. 2020;72(1):179–91. doi: https://doi.org/10.1002/art.41075