EJCRIM
European Journal
of Case Reports
in Internal Medicine

ADULT-ONSET STILL'S DISEASE WITH DERMATOMYOSITIS-LIKE LESIONS

Inés Segovia Rodríguez[1], Juan Vicente de la Sota[2], Alba Hernández Piriz[2], María Castillo Gutiérrez[1], Teresa López Bernal[1], Beatriz Aranegui Arteaga[1], Elena García Guijarro[2]

[1] Department of Dermatology, Infanta Cristina University Hospital, Madrid, Spain
[2] Internal Medicine Department, Infanta Cristina University Hospital, Madrid, Spain

Corresponding author's e-mail: egguijarro@salud.madrid.org

Received: 28/03/2025
Accepted: 08/04/2025
Published: 20/05/2025

Conflicts of Interests: The Authors declare that there are no competing interests.
Patient Consent: Obtained.
Acknowledgements: We would like to express our gratitude to the Department of Pathological Anatomy, particularly to Maria Trujillo Coronado, for the documentation provided.

How to cite this article: Segovia Rodríguez I, Vicente de la Sota J, Hernández Piriz A, Castillo Gutiérrez M, López Bernal T, Aranegui Arteaga B, García Guijarro E. Adult-onset Still's disease with dermatomyositis-like lesions. *EJCRIM* 2025;**12**:doi:10.12890/2025_005387

ABSTRACT

Still's disease is an inflammatory disorder of unknown origin, also known as juvenile idiopathic arthritis, that predominantly affects children, as it usually appears before the age of 16. However, there is another presentation known as adult-onset Still's disease, which has a bimodal distribution with the first peak of incidence between 16 and 25 years and the second peak between 36 and 46 years. Classically, it is described as a very typical clinical picture, mainly characterised by a transient salmon-coloured rash that appears with fever spikes, typically in the evening. Additionally, most patients frequently present with symptoms such as a sore throat, generalised lymphadenopathy and hepatosplenomegaly. Less common findings include myopericarditis, interstitial lung disease, serositis and neurological involvement. However, sometimes this disease can debut with more atypical signs and symptoms, delaying diagnosis and treatment.

This article describes the case of a 56-year-old Spanish patient who presented with pruritic periorbital lesions resembling the heliotrope rash of dermatomyositis but was ultimately diagnosed with adult-onset Still's disease. This case is reported so that in the presence of such cutaneous lesions, Still's disease is considered within the differential diagnosis to avoid delays in both diagnosis and treatment.

KEYWORDS

Adult-onset Still's disease, heliotrope rash, dermatomyositis, atypical cutaneous lesions

LEARNING POINTS

- In the early stages of adult-onset Still's disease, diagnosis can be challenging due to the lack of specific findings. In many cases, it is diagnosed by excluding other differential diagnoses.
- Cutaneous manifestations play a crucial role in correctly identifying the disease. The typical rash is a transient, salmon-coloured maculopapular eruption that coincides with fever spikes.
- However, atypical cutaneous manifestations such as dermatomyositis-like lesions, urticarial eruptions, persistent plaques, polymorphic erythema and lichenoid lesions, have been reported. These atypical skin findings may be associated with a more severe disease course, making early recognition essential for prompt diagnosis and treatment.

EFIM
European Federation of Internal Medicine

Publisher
smc media srl

INTRODUCTION

Adult-onset Still's disease (AOSD) is an inflammatory condition of unknown aetiology that was first described in adults by Eric Bywaters, a London physician, in 1971[1]. In 1992, Yamaguchi et al.[2], and later Fautrel et al.[3], proposed diagnostic criteria which, although designed for research purposes at the time, are commonly used in clinical practice for the diagnosis of Still's disease. Yamaguchi's criteria are divided into major and minor criteria and include exclusion criteria. Fautrel's criteria also distinguish between major and minor criteria but do not include exclusion criteria and, unlike Yamaguchi's, they include serological values such as ferritin[2,3].

In terms of incidence, Still's disease is a rare condition. Its incidence ranges between 0.16 and 0.4 per 100,000 people, depending on the population studied[4]. There is no difference in prevalence between sexes, but two peak incidence periods have been observed, between 16 and 25 years and between 35 and 45 years. Although more common in young adults, there are some cases described in patients over 70 years old[4].

The aetiology of Still's disease remains unknown, but it is believed to result from an inflammatory cascade triggered by the activation of the innate immune system. The final common pathway of this inflammatory response has been linked to the activation of the NOD, LRR and pyrin domain-containing protein 3 (NLRP3) inflammasome, leading to overproduction – among others – of interleukin-18 (IL-18). The cytokine storm in this disease likely has a multifactorial origin, involving environmental triggers in genetically predisposed individuals, as certain human leukocyte antigen alleles have been associated with disease development[5].

The clinical presentation is characterised by the triad of intermittent febrile peaks, arthritis and evanescent rash. The skin rash is typically maculopapular, evanescent and salmon coloured, appearing alongside febrile peaks and frequently exhibiting the so-called Koebner phenomenon[4]. Additionally, other systemic symptoms may be present including pharyngitis, generalised lymphadenopathy, hepatic dysfunction or splenomegaly. Less common findings include serositis, myocarditis, interstitial lung disease and neurological involvement[4], and others. Moreover, in severe cases, macrophage activation syndrome may develop, a serious complication that can be fatal if not detected and treated early[4].

However, while the typical clinical presentation is well characterised, Still's disease can be highly variable, with clinical manifestations that do not always align with the classic triad or other typical symptoms.

CASE DESCRIPTION

This case involves a 56-year-old woman with a medical history notable only for collagenous colitis without active treatment, who presented to the emergency department with a 10-day history of generalised discomfort, asthenia, headache and symmetric inflammatory polyarthralgia without evidence of arthritis, accompanied by pruritic periorbital skin lesions. She also reported occasional low-grade fever reaching 37.3°C and nocturnal hyperhidrosis. She denied constitutional symptoms or any other symptoms of systemic involvement.

Physical examination revealed symmetrical periorbital erythema with a heliotrope discolouration *(Fig. 1)*. Additionally, erythematous-violaceous lesions were observed on the extensor surfaces of the elbows and over the metacarpophalangeal joints, consistent with Gottron's sign and Gottron's papules *(Fig. 2 and 3)*.

Laboratory tests performed in the emergency department

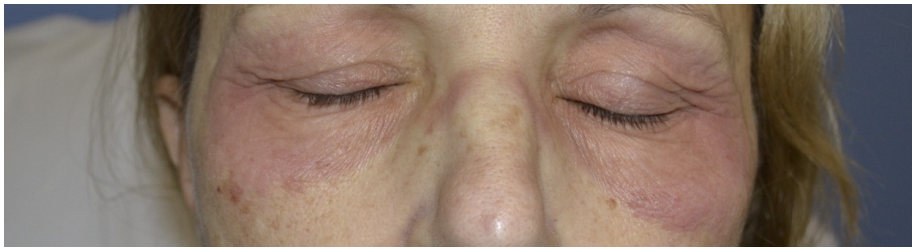

Figure 1. Symmetric pruritic erythematous-violaceous plaques in the periorbital region, resembling a heliotrope rash.

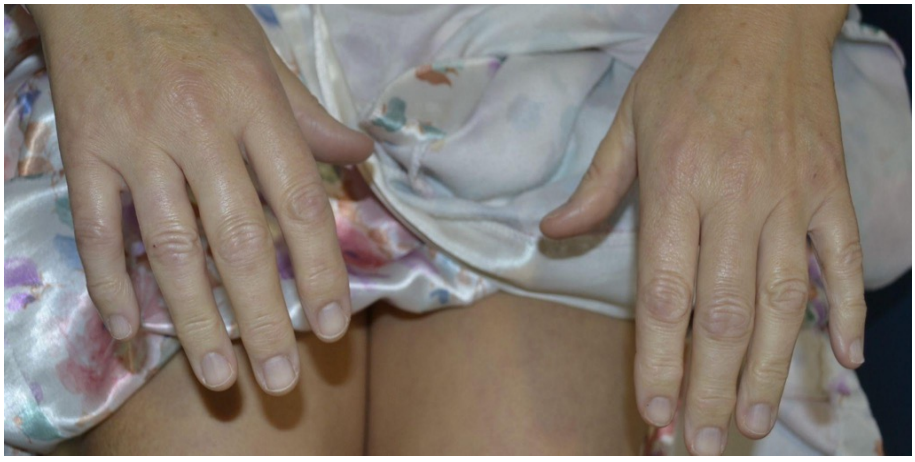

Figure 2. Erythematous-violaceous plaques over the metacarpophalangeal joints, consistent with Gottron's papules.

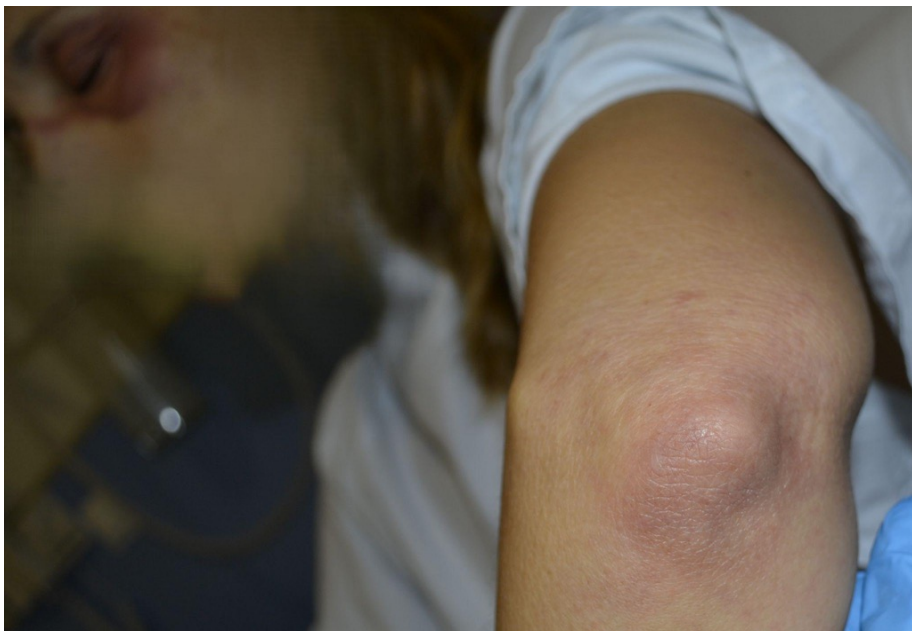

Figure 3. Erythematous-violaceous plaques over the elbow joint, consistent with Gottron's sign.

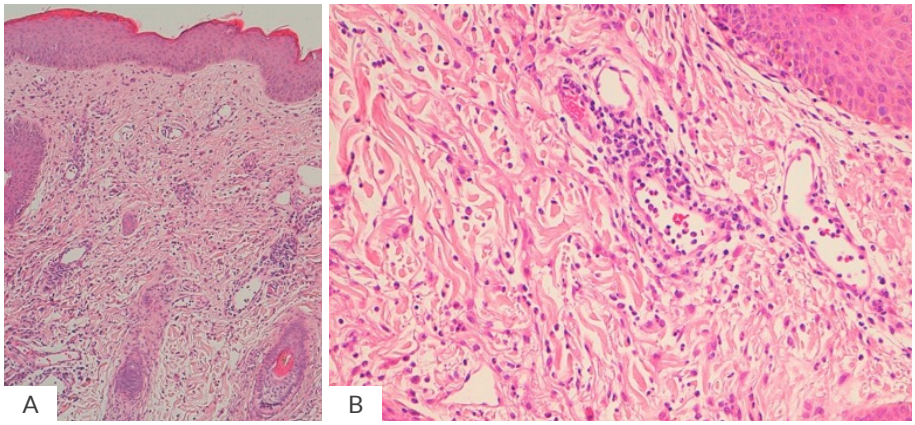

Figure 4. Haematoxylin-eosin histopathology. The epidermis showed no significant changes (A; ×10). Inflammatory infiltrate in the papillary and superficial to mid-reticular dermis, primarily composed of lymphocytes and neutrophils interspersed among collagen bundles (B; ×20).

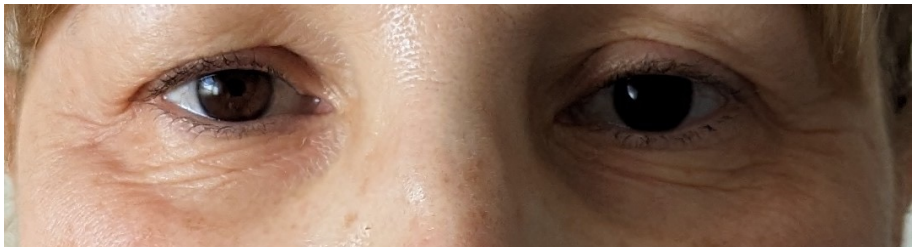

Figure 5. Our patient currently, asymptomatic after seven months of treatment with tocilizumab.

showed progressive thrombocytopenia: initial platelet count of 109 $\times 10^3$/µl, decreasing to 79 $\times 10^3$/µl during hospitalisation (normal range (NR) 140–370 $\times 10^3$/µl); elevated transaminases: AST 365 U/l (NR <37 U/l), ALT 404 U/l (NR 10–49 U/l), with normal bilirubin at admission, which subsequently increased to 1.8 mg/dl (NR 0.2–1.2 mg/dl). Lactate dehydrogenase (LDH) was elevated at 921 U/l (NR 120–246 U/l), and C-reactive protein was markedly elevated at 130.1 mg/l (NR <5 mg/l), further increasing to a peak of 295 mg/l. Fibrinogen levels were initially within the normal range but declined to 80 mg/dl (NR 150–400 mg/dl) during hospitalisation.

An abdominal ultrasound revealed previously unknown hepatosplenomegaly (liver measuring 17 cm in the longitudinal axis and spleen measuring 14 cm in the bipolar axis).

Given the suspicion of an autoimmune disease, with dermatomyositis as the primary differential diagnosis, corticosteroid therapy was initiated at a weight-based dosage (mg/kg) following a skin biopsy, and the patient was admitted for further monitoring.

During the first days of hospitalisation the patient experienced clinical deterioration, presenting with fever, a non-evanescent and pruriginous maculopapular rash, tachycardia and the need for low-flow oxygen therapy. Laboratory findings also worsened, showing increased acute-phase reactants, anaemia down to 11.2 mg/dl, thrombocytopenia down to 77 $\times 10^3$/µl and hypofibrinogenaemia as low as 99.1 mg/dl, all compatible with macrophage activation syndrome, with an HScore indicating a 99.5% probability[6].

Laboratory studies revealed marked hyperferritinaemia

	Present	Absent
Major criteria	• Arthralgia or arthritis lasting more than two weeks • Leukocytosis >10,000/mm^3 with ≥80% polymorphonuclear cells	• Intermittent fever ≥39 °C, lasting more than one week • Typical rash
Minor criteria	• Hepatomegaly or splenomegaly • Abnormal liver function tests • Negative antinuclear antibodies and rheumatoid factor	• Pharyngitis or odynophagia • Newly appeared lymphadenopathy
Exclusion criteria	• Infections • Tumour processes • Other rheumatological diseases	

Table 1. Yamaguchi criteria fulfilled by the patient.

reaching 17,527 mg/dl, while repeated autoimmune screening tests remained negative, with no additional significant findings beyond those previously described. Imaging studies, including a full-body CT scan, revealed pleuritis and previously noted hepatosplenomegaly. An endoscopic evaluation showed no significant abnormalities. Given this, corticosteroid therapy was intensified with methylprednisolone at 120 mg once daily for three days, leading to significant improvement in all parameters. The patient became afebrile, and oxygen therapy was discontinued within a few days following symptom resolution. Finally, the skin biopsy results indicated an inflammatory infiltrate in the papillary and superficial to mid-reticular dermis, predominantly composed of lymphocytes and polymorphonuclear neutrophils interspersed among collagen bundles, with occasional leukocytoclastic changes. The epidermis showed no significant alterations. The histopathological findings could be consistent with Still's disease *(Fig. 4)*. Finally, after reasonably ruling out other conditions, the case was concluded to be an AOSD presentation with atypical dermatomyositis-like lesions, based on the modified Yamaguchi criteria including the high ferritin level, which gives it greater sensitivity and specificity *(Table 1)*.

Due to significant systemic involvement and a probable life-threatening course, an anti-interleukin 1 therapy (anakinra) was added to the treatment regimen. Initially, the patient showed a good clinical response; however, within a few days, she developed a maculopapular rash with some urticarial lesions, symmetrically distributed across the trunk and extremities. This reaction was clinically and histopathologically interpreted, following a skin biopsy performed by the dermatology department, as a drug-induced toxicoderma caused by anakinra. Consequently, the treatment was switched to an anti-interleukin 6 agent (tocilizumab), leading to an excellent clinical outcome *(Fig. 5)*. Currently (one year after the episode), the patient remains asymptomatic under treatment with prednisone at a dose of 2.5 mg/day and tocilizumab.

DISCUSSION

AOSD is a rare condition of unknown aetiology that requires a high index of suspicion, as it is often a diagnosis of exclusion. We describe the case of a patient with AOSD, initially presenting with a pruritic periorbital rash resembling the heliotrope rash of dermatomyositis, accompanied by significant systemic involvement.

The typical cutaneous manifestation of AOSD is a transient, non-pruritic maculopapular salmon-coloured rash that appears in correlation with fever spikes. However, in our patient the rash was located in atypical areas and was non-evanescent and pruritic. Additionally, it appeared several days after disease onset, whereas typically it manifests concurrently or shortly after the onset of systemic symptoms[4].

Histopathologically, no specific findings were observed, although the most common histological feature of AOSD is an inflammatory infiltrate predominantly perivascular and interstitial in the superficial dermis, mainly composed of neutrophils with occasional lymphocytes. The epidermis may show dyskeratotic cells in the superficial layers or remain unaffected without any alterations[7].

A review of the published literature revealed reports of atypical cutaneous associations, including urticaria-like lesions, lichenoid lesions, pruritic plaques and flagellate erythema. These lesions are more commonly observed in young women, with a mean age of 39.3 ± 2.8 years[8]. Furthermore, in nearly half of the cases, atypical cutaneous manifestations were associated with a worse prognosis, featuring a more insidious clinical course and complications such as serositis, myocarditis, disseminated intravascular coagulation and macrophage activation syndrome[4]. In most cases presenting with the classical symptoms of AOSD, systemic corticosteroids are an effective treatment. However, patients with atypical cutaneous manifestations often require a more aggressive therapeutic approach.

Our patient presented similarities to these cases, with a severe clinical course complicated by macrophage activation syndrome, requiring high doses of systemic corticosteroids

to control the disease, and the early initiation of biological therapy as a first-line approach[5], which led us to taper the glucocorticoid doses rapidly to the minimum after three months of lack of activity. The remarkable and sustained improvement after the initiation of anti-interleukin treatment supports the diagnostic suspicion of AOSD.

CONCLUSIONS

Based on the literature review, there appears to be a correlation between atypical cutaneous manifestations and a more severe disease course in AOSD, particularly in young women with compatible clinical presentations.

REFERENCES

1. Bywaters EG. Still's disease in the adult. *Ann Rheum Dis* 1971;**30**:121-133. doi: 10.1136/ard.30.2.121
2. Yamaguchi M, Ohta A, Tsunematsu T, Kasukawa R, Mizushima Y, Kashiwagi H, et al. Preliminary criteria for classification of adult Still's disease. *J Rheumatol* 1992;**19**:424-430.
3. Fautrel B, Zing E, Golmard JL, Le Moel G, Bissery A, Rioux C, et al. Proposal for a new set of classification criteria for adult-onset still disease. *Medicine (Baltimore)* 2002;**81**:194-200. doi: 10.1097/00005792-200205000-00003
4. Efthimiou P, Kontzias A, Hur P, Rodha K, Ramakrishna GS, Nakasato P. Adult-onset Still's disease in focus: clinical manifestations, diagnosis, treatment, and unmet needs in the era of targeted therapies. *Semin Arthritis Rheum* 2021;**51**:858–874. doi: 10.1016/j.semarthrit.2021.06.004
5. Macovei LA, Burlui A, Bratoiu I, Rezus C, Cardoneanu A, Richter P, et al. Adult-onset Still's disease – a complex disease, a challenging treatment. *Int J Mol Sci* 2022;**23**:12810. doi: 10.3390/ijms232112810
6. Fautrel B, Mitrovic S, De Matteis A, Bindoli S, Antón J, Belot A, et al. EULAR/PReS recommendations for the diagnosis and management of Still's disease, comprising systemic juvenile idiopathic arthritis and adult-onset Still's disease. *Ann Rheum Dis* 2024;**83**:1614–1627. doi: 10.1136/ard-2024-225851.
7. Nataraja C, Griffiths H. Atypical cutaneous manifestations in adult onset Still's disease. *Case Rep Rheumatol* 2016;**2016**: 4835147. doi: 10.1155/2016/4835147
8. Ikeda T, Yokoyama K, Kawakami T. Heliotrope-like manifestation of adult-onset Still's disease with macrophage activation syndrome: a case-based review. *J Dermatol* 2022;**49**:736–740. doi: 10.1111/1346-8138.16373