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Ankylosing Spondylitis and Systemic Autoimmune Diseases: A Study of 25 Cases in Rheumatology

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Abstract

Introduction: The coexistence of ankylosing spondylitis and connective tissue diseases is rarely described in sub-Saharan Africa. **Objective:** To describe the epidemiological, diagnostic and prognostic profile of this association. **Methods:** A cross-sectional, descriptive study was conducted between January 2021 and March 2025 in the Rheumatology Department of CHU Aristide Le Dantec of Dakar, relocated to the C.O.U.D hospital. We collected data from patients presenting both ankylosing spondylitis and a connective tissue disease. **Results:** A total of 25 patients (80% women) were included. The mean age was 46 ± 16.9 years. The average diagnostic delay was 12.2 years. Ankylosing spondylitis and connective tissue disease were diagnosed concomitantly in 92% of cases. Axial involvement was noted in 87% of cases, and peripheral manifestations were constant. Mean CRP was 14.4 ± 11.9 mg/L. HLA B27 antigen was positive in 56.25% of cases. Associated systemic autoimmune diseases included Sjögren's syndrome (20 cases), rheumatoid arthritis (4 cases), and systemic lupus erythematosus (2 cases). One patient had both lupus and rheumatoid arthritis. Mean BASDAI and BASFI scores were 25.07 and 21.34 respectively. The SF-36 indicated impaired quality of life across all domains. **Conclusion:** Our study demonstrates the coexistence of ankylosing spondylitis and connective tissue diseases in clinical practice. This association should be considered in any case of axial and peripheral polyarthritis.

Keywords

Ankylosing Spondylitis, Spondyloarthritis, Systemic Autoimmune Diseases

1. Introduction

Ankylosing spondylitis (AS) is currently considered a polygenic and mixed inflammatory disease (straddling both autoimmunity and autoinflammation) [1]. It is the leading entity among the spondyloarthritis (SpA) group, which also includes psoriatic arthritis, reactive arthritis, arthritis associated with inflammatory bowel diseases, the SAPHO syndrome (Synovitis, Acne, Pustulosis, Hyperostosis, and Osteitis), undifferentiated SpA, and juvenile SpA [2].

Systemic autoimmune diseases, also known as connective tissue diseases, are diffuse inflammatory conditions mediated by adaptive immunity [1] [3]. The main disorders in this group include rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), Sjögren's syndrome (SS), systemic sclerosis (SSc), SHARP syndrome, inflammatory myopathies, overlap syndromes, and undifferentiated connective tissue diseases [3] [4].

Studies on the association between connective tissue diseases and SpA in general—or AS in particular—are rare in sub-Saharan Africa. The objective of this work was therefore to study the epidemiological, diagnostic, and prognostic profile of this association.

2. Patients and Methods

This was a retrospective and descriptive study conducted in the Rheumatology Department of CHU Aristide Le Dantec, relocated to the C.O.U.D Hospital (Centre des Œuvres Universitaires de Dakar), between January 2021 and March 2025.

We included all cases of patients presenting with ankylosing spondylitis (AS) associated with a systemic autoimmune disease. Patients with organ-specific autoimmune diseases were not included.

The diagnosis of AS was based on epidemiological, clinical, and paraclinical criteria according to the 2009 ASAS criteria [5] and the modified New York criteria [6]. The diagnosis of connective tissue diseases was established using the following classification criteria:

- ACR-EULAR 2010 for rheumatoid arthritis (RA) [7]
- ACR-EULAR 2016 for Sjögren's syndrome (SS) [8]
- ACR-EULAR 2019 for systemic lupus erythematosus (SLE) [9]

For each case, we collected the following data:

- **Demographic data**: age, sex, ethnicity, and geographic origin
- **Diagnostic data**:
  - Diagnostic delay
  - Circumstances of discovery
  - Nature of rheumatologic involvement (axial and/or peripheral)
  - Extra-articular manifestations, especially ocular (uveitis) and visceral
  - Inflammatory syndrome assessed by erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and serum inflammatory proteins via electrophoresis (alpha 1, alpha 2, beta 1, beta 2, and gamma globulins)
  - Cytopenias: anemia, leukopenia, thrombocytopenia

- HLA-B27 antigen status
- Presence or absence of radiographic sacroiliitis
- Spinal radiographic lesions: syndesmophytes, Romanus vertebrae, squaring
- Peripheral radiographic signs: joint space narrowing, erosions, geodes, and calcified enthesopathies

- **Prognostic data**:
  - AS disease activity evaluated by the BASDAI (Bath Ankylosing Spondylitis Disease Activity Index)
  - Functional impairment assessed by the BASFI (Bath Ankylosing Spondylitis Functional Index)
  - Impact on quality of life assessed by the SF-36 (Short Form-36) questionnaire
- **Therapeutic data and evolving modalities**

Information was retrieved from electronic medical records dedicated to patient care. Data were then compiled into an Excel spreadsheet and analyzed using SPSS version 26.0.

3. Results

3.1. Demographic Data

Out of a total of 610 SpA cases, 25 patients had an associated connective tissue disease, representing 4%. Women accounted for 80% of the cases. The mean age was 46 ± 16.9 years. The most represented age group was between 30 and 45 years. The Fulani ethnic group was predominant (48%), followed by the Wolof group (32%).

Regarding marital status, the majority of patients were married. Singles accounted for 20%. Among married patients, polygamous marriage was the most common arrangement, observed in 40% of cases. Patients came from various regions of Senegal as well as from neighboring countries such as Guinea and Mali.

3.2. Diagnostic Data

The connective tissue diseases associated with AS are shown in Table 1. The diagnosis was made on average 12.2 years after the onset of the first symptoms. In 92% of cases, AS and the connective tissue disease were diagnosed simultaneously. In the remaining cases, the connective disease preceded the AS by an average of 10 years.

Table 1. Distribution of connective tissue diseases associated with AS.

Variable	Values
	N = 26 (100%)
SS (Sjögren's Syndrome)	20 (77)
RA (Rheumatoid Arthritis)	4 (15)
SLE (Systemic Lupus Erythematosus)	2 (8)

Clinically, axial involvement was present in 87% of patients. Involvement of all three spinal segments was observed in 25% (see Figure 1 below). The Schöber index was normal in 50% of patients and was ≤13 cm in 40%.

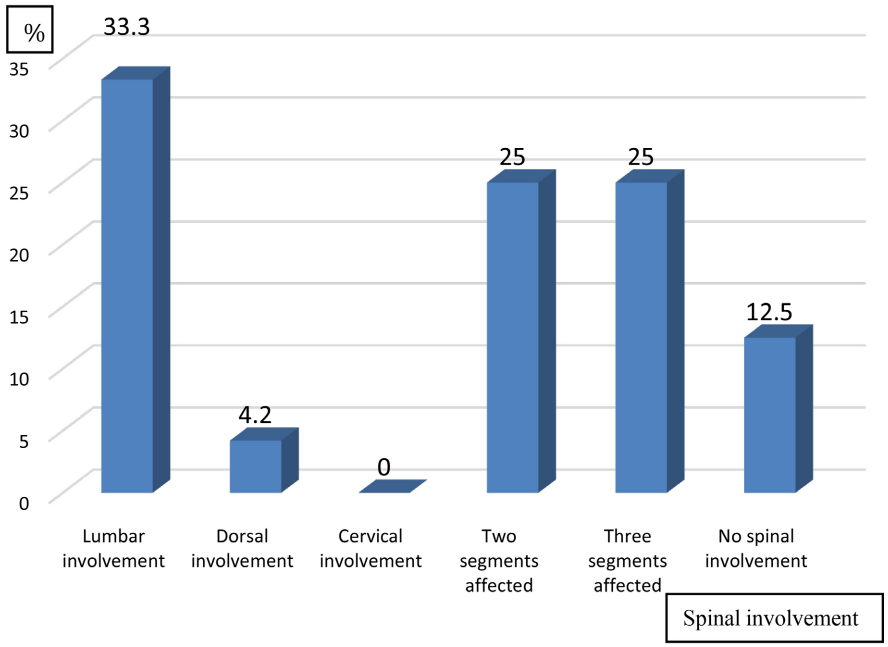

Figure 1. Illustration of the distribution of patients based on the nature of axial involvement.

Peripheral manifestations were constant, including monoarthritis (8%), oligoarthritis (4%), polyarthritis (88%), and enthesitis (76%). No cases of dactylitis were reported.

Regarding extra-articular manifestations, no cases of uveitis were identified. Cardiomyopathy was found in 8% of patients. Pulmonary involvement in the form of diffuse interstitial lung disease (ILD) affected 8% of cases. An ischemic stroke occurred in 4% of cases. There were no signs of kidney damage.

3.3. Biological Investigations

The mean erythrocyte sedimentation rate (ESR) was 34.8 ± 21.4 mm/hr, and the mean C-reactive protein (CRP) level was 14.4 ± 11.9 mg/L (Table 2).

Anemia affected 28% of patients, and thrombocytopenia was found in 2.4%. The HLA B-27 antigen was tested in 16 patients and was positive in 56.25% of them.

Table 2. Biological test results.

Variable	Mean
ESR (mm 1h)	34.8 ± 21.4
CRP (mg/l)	14.4 ± 11.9
Alpha1 (g/l)	2.6 ± 1

Continued

Alpha2 (g/l)	8.2 ± 1.7
Beta (g/l)	8.6 ± 3.4
Beta1 (g/l)	4.3 ± 0.8
Beta2 (g/l)	3.6 ± 0.3
Gamma (g/l)	19.2 ± 10.3

The gamma globulin curve was polyclonal.

3.4. Imaging Findings

Radiographic sacroiliitis was observed in 92% of patients. Syndesmophytes were identified in 60% of cases. Romanus vertebrae were found in 8% of patients, and squaring in 32%.

Signs of peripheral osteoarticular destruction were observed in 56% of cases. Calcified enthesopathy was detected in 76% of patients.

3.5. Prognostic Data

The average BASDAI score was 25.07, and the BASFI score was 21.34. Both scores were greater than 40/100 in 33.3% of cases.

The SF-36 revealed impairment in all dimensions of quality of life. The least affected areas were emotional well-being, physical pain, and health change compared to one year earlier (Table 3).

Table 3. SF-36 quality of life assessment

Domain	Mean score
Physical functioning	46.1 ± 25.1791
Physical limitations	40.2 ± 35.4
Emotional limitation	37.2 ± 32.5
Vitality	41.8 ± 23
Emotional wellbeing	58.5 ± 14.6
Social functioning	46.6 ± 29.5
Physical pain	51.2 ± 19.6
General health	48 ± 19.7
Health change (1 year)	66.6 ± 29.7

Symptomatic treatment was based on non-steroidal anti-inflammatory drugs or prednisone. Prednisone was administered at a dose of 0.1 mg/kg/day in cases of pure joint involvement, 0.5 mg/kg/day in cases of diffuse interstitial lung disease, and 1 mg/kg/day in cases of cardiac and neurological involvement.

All patients received background treatment with cs-DMARDs: methotrexate (15 to 25 mg/week + folic acid: 15 to 25 mg/week) and hydroxychloroquine (400 mg/day in two doses). No patients were treated with b-DMARDs. The response

to treatment was favourable in all cases.

4. Discussion

This study focuses on the association between ankylosing spondylitis (AS) and connective tissue diseases. The coexistence of these diseases in the same patient may not be coincidental. Formerly considered a purely autoinflammatory condition [3], AS is now classified as an inflammatory disease that involves both autoinflammatory and autoimmune mechanisms [1].

Indeed, in addition to the activation of innate immunity, AS is characterized by activation of Th1 [10] and Th17 [11] lymphocytes. The Th1 pathway leads to high production of TNF-α [10], while the Th17 pathway promotes the secretion of large amounts of IL-17 and IL-23 [11]. This justifies the use of biotherapies targeting these cytokines in the treatment of AS [12].

This autoimmune component of AS may predispose individuals to develop other autoimmune diseases. However, the association between AS and connective tissue diseases is rarely described in sub-Saharan Africa, unlike in Western literature.

Among Caucasian populations, SpA can be associated with all forms of connective tissue diseases, but the most frequently involved systemic autoimmune diseases are Sjögren's syndrome (SS) and rheumatoid arthritis (RA) [13]-[15], which were also observed in our study. In Italy, the prevalence of SS among SpA patients was estimated at 10% [14]. In China, Zhao showed that 6.6% of RA patients may test positive for HLA-B27 [13]. The prevalence of the association with RA varies between 1/50,000 and 1/100,000 according to Ferjani HL *et al.* The author also reports that since its first description in 1976, only 104 cases of coexisting RA and AS have been reported [16].

In our study, connective tissue diseases were associated with AS in 4% of cases, with SS in 3%, and RA in 0.7%.

In sub-Saharan Africa, we found only three studies on this association. The first, described in 2006 by Ouedraogo *et al.* in Burkina Faso, involved a 41-year-old man with AS and systemic sclerosis [17]. Thirteen years later, Traoré *et al.* in Guinea reported the case of a 56-year-old woman with AS associated with systemic lupus erythematosus (SLE) and secondary hyperparathyroidism [18]. In 2021, the first case series compiling 40 observations of SS concurrent with SpA was published by Condé *et al.*, also in Guinea [19]. In that series, SS was the only connective tissue disease, affecting 77% of the patients [19].

In our study, as well as in the series by Abba *et al.* involving isolated SpA, the prevalence of the HLA-B27 antigen was similar: 56.25% and 51.48%, respectively [20]. However, the HLA-B27 prevalence was lower (40%) in the Condé cohort [19].

When comparing disease activity and functional impact, the Abba *et al.* cohort showed higher ESR and CRP values, despite a shorter symptom duration (**Table 4**) [20]. The same trend was observed for BASDAI and BASFI scores. These data

suggest that isolated SpA may be more active than SpA associated with connective tissue diseases.

Table 4. Comparison of our study with those by Condé and Abba.

Criteria	Condé [19]	Our study	Abba [18]
Epidemiological data			
▪ Sex ratio (F/H)	0.8	0.8	1.83
▪ Mean age (yrs)	49 ± 8	46 ± 16.9	41.66 ± 15.6
Diagnostic data			
▪ Diagnostic delay (yrs)	6	12.2	5.95
▪ Axial involvement (%)	-	87	-
o Low back pain	55	33	84.90
o Involvement of 3 spinal segments	-	25	
o Lumbar stiffness	-	40	
o Syndesmophytes	-	60	
o Sacroiliitis	75	92	82.85
o Squaring	-	32	
o Romanus vertebra	-	8	
▪ Peripheral **involvement** (%)	90	100	-
o Monoarthritis	-	8	22.50
o Oligoarthritis	-	4	27.90
o Polyarthritis	-	88	30
o Enthesitis	-	76	21.30
o Dactylitis	-	0	-
▪ Systemic involvement (%)			
o Uveitis	22.5	0	10.20
o Cardiomyopathy	-	8	-
o Aortic insufficiency	-	-	4.80
o Interstitial lung disease (ILD)	-	8	-
o Fibro-bullous disease	-	-	3.20
o Ischemic stroke (CVA)	-	4	-
▪ Biological markers			
o ESR (mm)	-	34.8	39.60
o CRP (mg/l)	-	14.4	22.76
▪ HLA-B27 positive (%)	40	56.25	51.48
Prognosis			
o BASDAI	30.4	25.07	50
o BASFI	46.3	21.34	50

A case-control study is therefore needed to confirm or refute these hypotheses.

The therapeutic indications for our patients are consistent with the data in the literature. The cs-DMARDs are used as first-line treatment for these diseases, both in isolated and associated forms [21].

5. Conclusions

Although limited in size, our study confirms the coexistence of AS and connective tissue diseases in our patients. This association was most frequent in young women aged between 30 and 45 years. The connective tissue diseases associated with AS were predominantly Sjögren's syndrome, followed by rheumatoid arthritis.

Further studies with larger sample sizes are planned to deepen our understanding of this association.

Conflicts of Interest

The authors declare no conflict of interest.

References

[1] Jamilloux, Y., Sève, P. and Henry, T. (2014) Les inflammasomes et les maladies humaines. *La Revue de Médecine Interne*, **35**, 730-741. https://doi.org/10.1016/j.revmed.2014.04.017

[2] Wendling, D., Hecquet, S., Fogel, O., Letarouilly, J., Verhoeven, F., Pham, T., *et al.* (2022) Actualisation 2022 des recommandations de la Société française de rhumatologie (SFR) pour la prise en charge en pratique courante des malades atteints de spondyloarthrite, incluant le rhumatisme psoriasique. *Revue du Rhumatisme*, **89**, 210-222. https://doi.org/10.1016/j.rhum.2021.11.010

[3] Sibilia, J. (2007) Comment définir et classer les maladies inflammatoires? *Revue du Rhumatisme*, **74**, 714-725. https://doi.org/10.1016/j.rhum.2007.07.003

[4] Hachulla, E. (2018) Connectivites: Quel bilan initial et quel suivi? *JMV-Journal de Médecine Vasculaire*, **43**, 75-76. https://doi.org/10.1016/j.jdmv.2017.12.006

[5] Rudwaleit, M., van der Heijde, D., Landewé, R., Listing, J., Akkoc, N., Brandt, J., *et al.* (2009) The Development of Assessment of Spondyloarthritis International Society Classification Criteria for Axial Spondyloarthritis (Part II): Validation and Final Selection. *Annals of the Rheumatic Diseases*, **68**, 777-783. https://doi.org/10.1136/ard.2009.108233

[6] Van der Linden, S., Valkenburg, H.A. and Cats, A. (1984) Evaluation of Diagnostic Criteria for Ankylosing Spondylitis. A Proposal for Modification of the New York Criteria. *Arthritis & Rheumatism*, **27**, 361-368. https://doi.org/10.1002/art.1780270401

[7] Aletaha, D., Neogi, T., Silman, A.J., Funovits, J., Felson, D.T., Bingham, C.O., *et al.* (2010) 2010 Rheumatoid Arthritis Classification Criteria: An American College of Rheumatology/European League against Rheumatism Collaborative Initiative. *Arthritis & Rheumatism*, **62**, 2569-2581. https://doi.org/10.1002/art.27584

[8] Shiboski, C.H., Shiboski, S.C., Seror, R., Criswell, L.A., Labetoulle, M., Lietman, T.M., *et al.* (2017) 2016 American College of Rheumatology/European League against Rheumatism Classification Criteria for Primary Sjögren's Syndrome: A Consensus and Data-Driven Methodology Involving Three International Patient Cohorts. *Annals of*

the Rheumatic Diseases, **76**, 9-16. https://doi.org/10.1136/annrheumdis-2016-210571

[9] Aringer, M., Costenbader, K., Daikh, D., Brinks, R., Mosca, M., Ramsey-Goldman, R., *et al.* (2019) 2019 European League against Rheumatism/American College of Rheumatology Classification Criteria for Systemic Lupus Erythematosus. *Arthritis & Rheumatology*, **71**, 1400-1412. https://doi.org/10.1002/art.40930

[10] Maksymowych, W.P. (2012) Les biomarqueurs dans la spondylarthrite: De la physiopathologie à l'évaluation de la maladie. *Revue du Rhumatisme*, **79**, 101-103. https://doi.org/10.1016/j.rhum.2011.10.012

[11] Wendling, D., Guillot, X. and Prati, C. (2014) L'axe IL-23/Th17 dans la spondyloarthrite: La voie royale? *Revue du Rhumatisme*, **81**, 447-450. https://doi.org/10.1016/j.rhum.2014.08.003

[12] Navarro-Compán, V., Sepriano, A., El-Zorkany, B. and van der Heijde, D. (2021) Axial Spondyloarthritis. *Annals of the Rheumatic Diseases*, **80**, 1511-1521. https://doi.org/10.1136/annrheumdis-2021-221035

[13] Barczyńska, T.A., Węgierska, M., Żuchowski, P., Dura, M., Zalewska, J., Waszczak, M., *et al.* (2015) Coexistence of Rheumatoid Arthritis and Ankylosing Spondylitis. *Rheumatology*, **53**, 279-285. https://doi.org/10.5114/reum.2015.55832

[14] Bruzzese, V., Marrese, C., Scolieri, P. and Pepe, J. (2020) Psoriatic Spondyloarthritis and Sjögren Syndrome: A Casual Association? *Reumatismo*, **72**, 170-172. https://doi.org/10.4081/reumatismo.2020.1287

[15] Sattar Bv, M.A. and AL-Sughyer, S.R. (1988) La coexistence de la polyarthrite rhumatoïde, de la spondylarthrite ankylosante et de la dermatomyosite chez un patient atteint de diabète sucré et des antigènes associés. *British Journal of Rheumatology*, **27**, 146.

[16] Ferjani, H.L., Hiba, B.A., Nessib, D.B., Kaffel, D., Maatallah, K. and Hamdi, W. (2025) The Coexistence of Rheumatoid Arthritis and Ankylosing Spondylitis: Case Series and Literature Review. *Revista Colombiana de Reumatología*. https://doi.org/10.1016/j.rcreu.2024.09.005

[17] Ouédraogo, D., Palazzo, E., Nlomé-Nzé, M., Somogyi-Demerjian, N. and Meyer, O. (2009) Ankylosing Spondylitis and Systemic Sclerosis: A Rare Combination. *Joint Bone Spine*, **76**, 290-292. https://doi.org/10.1016/j.jbspin.2006.07.008

[18] Traoré, M., Kamissoko, A.B., Conde, K., Wann, T.A., Barry, A. and Ndiaye, M. (2019) Association lupus érythémateux systémique, spondylarthrite ankylosante et hyperparathyroïdie secondaire. *Médecine d'Afrique noire*, **6**, 345-347.

[19] Condé, K., Hounsou, C., Adechina, W.A., Guelngar, C.O., Keita, F. and Cissé, F.A. (2021) Association syndrome de Sjögren et spondyloarthrites: Étude de 40 observations au service de rhumatologie de l'hôpital national Ignace Deen de Conakry, Guinée. *Revue du Rhumatisme*, **88**, A277-A278. https://doi.org/10.1016/j.rhum.2021.10.470

[20] Abba, A., Niasse, M., Diaby, L.M. and Ali, H. (2021) Spondyloarthrites au Sénégal: Étude de 770 observations. *La Tunisie Médicale*, **99**, 585-600.

[21] Zhang, Y., Feng, B., Dong, J., Zhong, Y., Wang, L. and Zhao, L. (2021) Rheumatoid Arthritis Coexisting with Ankylosing Spondylitis. A Report of 22 Cases with Delayed Diagnosis. *Medicine*, **100**, e25051. https://doi.org/10.1097/md.0000000000025051