ESI Preprints **Not Peer-reviewed**

Juvenile Idiopathic Arthritis in a Hospital Setting in Chad: A Study of 85 Cases

Garba Harine Abdel Aziz
Service de Rhumatologie, Hôpital de la Refondation du Tchad,
Université de N'Djamena, Tchad
Adama Bah
CHU Ignace Deen, Université Gamal Abdel Nasser de Conakry, Guinée
Ramadhane Bouchrane
Hôpital du Coud, Université Cheikh Anta Diop de Dakar, Sénégal
Hamid Harine Abdel Aziz
Service de Rhumatologie, Hôpital de la Refondation du Tchad,
Université de N'Djamena, Tchad
Moustapha Niasse
Diallo Saïdou
Hôpital du Coud, Université Cheikh Anta Diop de Dakar, Sénégal

Doi: 10.19044/esipreprint.8.2025.p567

Approved: 21 August 2025
Posted: 23 August 2025

Cite As:
Garba, H.A., Bah, A., Bouchrane, R., Hamid, H.A., Niasse, M., & Saïdou, D. (2025). *Juvenile Idiopathic Arthritis in a Hospital Setting in Chad: A Study of 85 Cases*. ESI Preprints. https://doi.org/10.19044/esipreprint.8.2025.p567

Abstract

Introduction: Juvenile idiopathic arthritis (JIA) is the most common chronic inflammatory rheumatism in children. It remains poorly studied in sub-Saharan Africa. **Objective:** To describe the epidemiological, clinical, therapeutic and evolutionary features of JIA in a rheumatology department in Chad. **Methods:** This was a retrospective descriptive study involving 85 cases of JIA collected from January 2020 to September 2024. Demographic, clinical, biological, therapeutic, and follow-up data were analyzed. **Results:** Among 111 systemic disease cases, 85 were JIA. The mean age at disease onset was 11.2 years with a female-to-male ratio of 2.4. The most common forms were enthesitis-related arthritis (30.6%), RF-negative polyarthritis (30.6%), and oligoarthritis (18.8%). The average diagnostic delay was 4.2 years. The most frequent extra-articular manifestations were uveitis (15.3%)

and lymphadenopathy (5.9%). Treatment included NSAIDs, corticosteroids, methotrexate, and etanercept in four cases. Three deaths were recorded. Outcomes were favorable in most cases, as assessed by CHAQ and JADAS scores. **Conclusion:** JIA is the most frequent pediatric systemic disease in our setting. Diagnosis remains delayed and access to innovative therapies is limited. Early diagnosis and structured follow-up should be strengthened.

Keywords: Juvenile idiopathic arthritis, Chad, Children, Rheumatology, Treatment

Introduction

Juvenile Idiopathic Arthritis (JIA) is the most common form of systemic inflammatory disease in children. It encompasses a heterogeneous group of conditions and is classified according to the International League of Associations for Rheumatology (ILAR) criteria. In Chad, as in most Sub-Saharan African countries, limited research has been dedicated specifically to JIA. The objective of this study was to describe the epidemiological, clinical, therapeutic, and outcome profile of JIA cases observed in a hospital rheumatology unit in Chad, in order to improve recognition and management in the African context.

Materials and Methods

This was a retrospective descriptive study conducted in the Pediatrics Department of the Hospital of Refoundation of Chad (HRT) and the Rheumatology Department of the National Reference University Hospital Center (CHURN), from January 2020 to September 2024. We included patients under the age of 16 at disease onset who met the ILAR classification criteria for JIA. Clinical, biological, immunological, and therapeutic data were analyzed. Ethical approval was obtained and confidentiality was preserved.

Results

Among 111 cases of systemic diseases in children recorded during the study period, 85 patients (76.6%) were diagnosed with JIA. These cases formed the study population. The female gender predominated with 60 cases (70.6%) versus 25 male cases (29.4%), yielding a female-to-male ratio of 2.4. The mean age at disease onset was 11.26 years (range: 2 to 16 years), and the mean age at diagnosis was 15.4 years (range: 3 to 35 years). The average diagnostic delay was 4.2 years. The distribution of JIA clinical forms according to ILAR classification was: Oligoarticular (18.8%), Polyarticular RF-negative (30.6%), Polyarticular RF-positive (16.5%), Systemic (Still's disease) (5.9%), Enthesitis-related arthritis (ERA) (30.6%),

and Undifferentiated forms (5.9%). One case showed an association between systemic JIA and macrophage activation syndrome. Peripheral joint involvement was found in 91.8%, axial involvement in 36.5%, and enthesitis in 56.5%. Extra-articular manifestations included uveitis (13 cases), lymphadenopathy (5), hepatomegaly and pleurisy (2 each), myocarditis (1), and onycholysis (1). Biological tests showed elevated CRP in 63.3%, RF positivity in 18 patients, ANA positive in 6 of 12 tested, HLA-B27 in 12 of 20 tested, and high ASLO in 10 cases. Treatments included analgesics, NSAIDs, corticosteroids, and disease-modifying therapies: methotrexate (62 cases), hydroxychloroquine (29), sulfasalazine (6), and etanercept (4). Assessment using CHAQ and JADAS scores indicated significant improvement. Three deaths were recorded.

Table I: Distribution of patients by clinical form of JIA

Clinical form of JIA	Number of cases (%)
Oligoarticular	16 (18,8 %)
Polyarticular FR negative	26 (30,6 %)
Polyarticular FR positive	14 (16,5 %)
Systemic (Still)	5 (5,9 %)
Enthesitic (ERA)	26 (30,6 %)
Undifferentiated	5 (5,9 %)
JIA + MAS	1 (1,2 %)

Table II: Extra-articular manifestations observed

Extra-articular manifestations	Number of cases (%)
Uveitis	13 (15,3 %)
Adenopathies	5 (5,9 %)
Hepatomegaly	2 (2,4 %)
Pleurisy	2 (2,4 %)
Myocarditis	1 (1,2 %)
Onycholysis	1 (1,2 %)

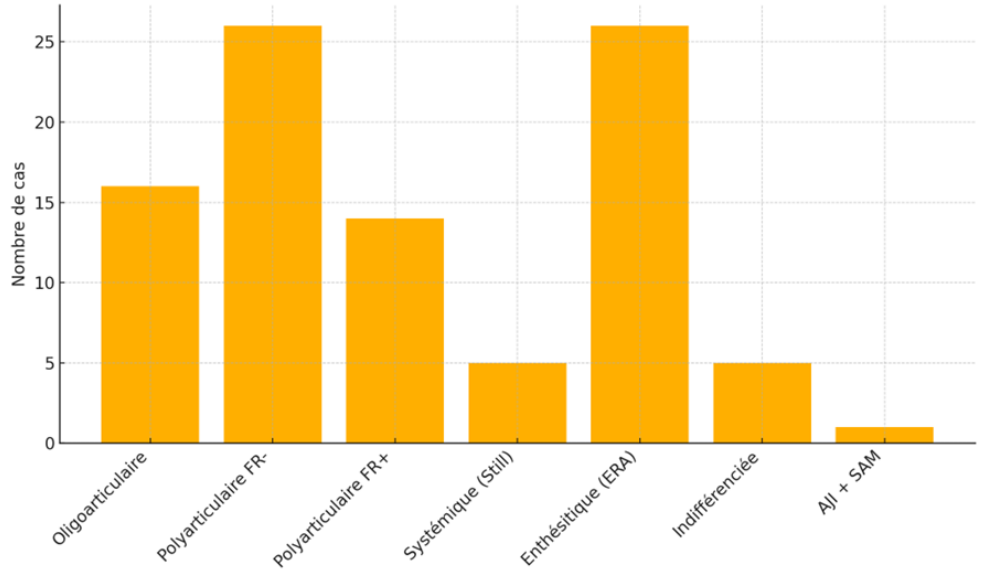

Figure 1: Graphical distribution of JIA clinical forms

This figure illustrates the distribution of the different clinical forms of JIA observed in the study. ERA and polyarticular FR- are the most frequent forms. To be inserted as a histogram graph in the final version.

Discussion

Juvenile Idiopathic Arthritis (JIA) remains the most common inflammatory rheumatic disease in children. In our study, JIA represented 76.6% of systemic diseases in children, highlighting its importance in the pediatric population in Chad. This proportion aligns with findings from other African studies, such as those conducted in Cameroon, Côte d'Ivoire, and Senegal.

The average age at onset (11.26 years) and diagnostic delay (4.2 years) underscore persistent challenges in early detection. These delays may be attributed to the limited awareness of pediatric rheumatic diseases among primary care providers, the deceptive nature of early symptoms, widespread reliance on traditional medicine, and lack of access to specialized diagnostics.

Clinically, the predominance of polyarticular and enthesitis-related forms was notable. Systemic forms, though less frequent, were associated with higher morbidity. The relatively high frequency of uveitis observed (13 cases) emphasizes the need for systematic ophthalmological screening in JIA patients. The biological workup, though limited by technical resources, contributed to diagnostic orientation. Despite restricted access to biologics, treatment outcomes were encouraging, with significant clinical improvement

observed in the majority of patients. Nevertheless, the recorded mortality (three cases) highlights the potentially severe course of the disease.

This study emphasizes the urgent need for improved screening strategies, enhanced training in pediatric rheumatology, and expanded access to advanced therapies in low-resource settings like Chad.

Limitations of this study include its retrospective design, incomplete immunological testing in all patients, and single-country scope. A larger multicentric prospective study would provide a broader epidemiological perspective.

Conclusion

This hospital-based study confirms that JIA is the most prevalent systemic disease in children in tropical settings. Polyarticular and enthesitis-related forms were the most common presentations, with a predominance in females and a mean age of onset of 11 years. Diagnostic delay, limited access to specialized investigations, and unavailability of advanced biologics remain major challenges. These findings underscore the need for early detection, improved access to care, and targeted capacity building in pediatric rheumatology services in Chad and similar contexts.

Conflict of Interest: The authors reported no conflict of interest.

Data Availability: All data are included in the content of the paper.

Funding Statement: The authors did not obtain any funding for this research.

References:

1. Job-Deslandre, C. (2016). Arthrites juvéniles idiopathiques: définition et classification. *Archives de Pédiatrie, 23*(5), 437–441.
2. El Maghraoui, A. (2014). Arthrite juvénile idiopathique. *La Presse Médicale, 43*, 27–33.
3. Koné-Paut, I. (2003). Approche génétique des pathologies inflammatoires de l'enfant. *Revue du Rhumatisme, 70*, 517–520.
4. Bader-Meunier, B., et al. (2003). Le lupus érythémateux disséminé de l'enfant. *Archives de Pédiatrie, 10*, 147–157.
5. Doualla, B. M., et al. (2014). Les rhumatismes inflammatoires chroniques chez les patients de 0 à 20 ans au Cameroun. *Health Sciences and Disease, 15*(3), 1–4.
6. Diomandé, M., et al. (2016). Juvenile idiopathic arthritis in Abidjan: Report of 17 cases. *British Journal of Medicine and Medical Research, 16*(11), 1–6.

7. Feliho, J. L. (2004). *Arthrite chronique juvénile au Sénégal* (Doctoral dissertation, Université Cheikh Anta Diop).
8. Chipeta, J., et al. (2013). Clinical patterns of juvenile idiopathic arthritis in Zambia. *Pediatric Rheumatology, 11*, 1–6.
9. Sekkali, N., et al. (2010). Le rhumatisme articulaire aigu. *Journal Marocain de Cardiologie*, 28–33.
10. Barsaoui, S. (2005). Rhumatisme articulaire aigu chez l'enfant. *EMC - Pédiatrie, 2*, 243–255.
11. Cotton, A., et al. (2013). *Imagerie musculosquelettique: pathologies générales* (pp. 189–200).
12. Solau-Gervais, E., et al. (2010). Prévalence des AJI dans l'Ouest de la France. *Revue du Rhumatisme, 77*, 55–58.
13. Abdwani, R., et al. (2012). Juvenile idiopathic arthritis in Oman. *Pediatric Rheumatology, 10*(1), 18.
14. Seck, N. B., et al. (2016). Fièvre méditerranéenne familiale: observation sénégalaise. *Annales de Dermatologie et de Vénéréologie.*
15. Prieur, A. M. (1998). *Rhumatologie pédiatrique*. Flammarion Médecine.
16. Beukelman, T., et al. (2011). 2011 ACR recommendations for the treatment of JIA. *Arthritis Care & Research, 63*(4), 465–482.
17. Petty, R. E., et al. (2004). ILAR classification of JIA. *The Journal of Rheumatology, 31*, 390–392.
18. Ravelli, A., et al. (2018). Treat-to-target for JIA. *Annals of the Rheumatic Diseases, 77*, 819–828.
19. Martini, A., et al. (2019). Juvenile idiopathic arthritis classification: quo vadis? *Nature Reviews Rheumatology, 15*(10), 557–565.
20. Hinks, A., et al. (2013). Genetic association in JIA. *Nature Genetics, 45*(6), 664–669.
21. Weiss, P. F. (2015). Diagnosis and treatment of enthesitis-related arthritis. *Current Opinion in Rheumatology, 27*(5), 505–512.
22. De Benedetti, F., et al. (2012). Canakinumab for systemic JIA. *New England Journal of Medicine, 367*, 2396–2406.
23. Ruperto, N., et al. (2012). Tocilizumab in systemic JIA. *New England Journal of Medicine, 367*, 2385–2395.
24. Wulffraat, N., et al. (2000). Efficacy of methotrexate in JIA. *Annals of the Rheumatic Diseases, 59*(7), 540–546.
25. Martini, A. (2012). It is time to rethink juvenile idiopathic arthritis classification. *Annals of the Rheumatic Diseases, 71*(9), 1437–1439.
26. Behrens, E. M., et al. (2007). Macrophage activation syndrome in JIA. *Arthritis & Rheumatism, 56*(11), 3374–3384.

27. Gattorno, M., et al. (2007). Autoinflammatory disorders in children. *Current Opinion in Rheumatology, 19*(5), 615–620.
28. Wallace, C. A., et al. (2008). Juvenile idiopathic arthritis: current treatment and future needs. *The Journal of Rheumatology, 35*(4), 726–728.
29. Nigrovic, P. A., et al. (2010). Efficacy of early aggressive therapy in polyarticular JIA. *Arthritis & Rheumatism, 62*(9), 2581–2591.
30. Ravelli, A., & Martini, A. (2007). Juvenile idiopathic arthritis. *The Lancet, 369*(9563), 767–778.