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Profile of Juvenile Idiopathic Arthritis Observed in Abidjan (Cote d'Ivoire): A Report about 17 Cases

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Authors' contributions

This work was carried out in collaboration between all authors. Authors AKC, ESCLK, JCY, MGK, CK and KJMD contributed to the study design, coordination of the project and interpretation of the data. Author ESCLK translated the manuscript in from French to English. Author MD designed the study, wrote the protocol, did the data collection, performed the statistical analysis and wrote the manuscript. Authors MD and AKC managed the sample size estimation and did the statistical calculations. Authors BO, EE, JCD and MNK revised the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Background: Juvenile idiopathic arthritis is the most common rheumatic disease in children. Compared to Western countries, very few studies have been devoted to this disease in black sub-Saharan Africa. The aim is to describe the epidemiological, clinical, paraclinical and therapeutic features of juvenile idiopathic arthritis observed in Abidjan and identify the clinical forms.
Methodology: This descriptive retrospective study covered 17 children (11 girls and 6 boys, age range: 3-15 years) suffering from juvenile idiopathic arthritis which met the Durban criteria of 1997

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revised in Edmonton in 2001. The children have been selected in the rheumatology department of University Hospital Center of Cocody in Abidjan from January 2005 to December 2013. We were interested to sociodemographic, clinical, biological, radiological and therapeutic parameters.
Results: The frequency of juvenile idiopathic arthritis was 0.03% that was 17 children among the 4608 rheumatic diseases identified during the study period. The number of patients was dominated by females (64.7%) and the average age at the time of diagnosis was 11 years. The average delay at the time of diagnosis was 15 months. The main complaints of patients were fever, joint involvement and impaired general condition observed each in 12 cases. It was noted the presence of radiographic erosions in 4 cases and 1 case of coxitis on Computer tomography scan. The clinical forms identified were systemic form (12 cases), oligoarticular form (1 case), polyarticular form with positive rheumatoid factors (3 cases), enthesitis-related arthritis (1 case). The vast majority of our patients (15 of 17) was treated with the combination therapy corticosteroid and methotrexate.
Conclusion: Juvenile idiopathic arthritis appears very uncommon and affects female children. It is expressed by febrile arthritis with an impaired general condition and is dominated by the systemic form.

Keywords: Juvenile idiopathic arthritis; profile; children; Abidjan.

1. INTRODUCTION

Juvenile idiopathic arthritis (JIA) remains the most common rheumatic disease in children under 16 years. It includes 6 groups of arthritis (systemic form or Still's disease in children, oligoarticular form, polyarticular form with positive rheumatoid factors, polyarticular form with negative rheumatoid factors, enthesitis-related arthritis and psoriatic arthritis) plus a last non classified group of arthritis. The incidence and prevalence are respectively estimated between 2 to 20 per 100 000 children and between 16 to 150 per 100 000 children [1]. The overall prevalence in Europe ranged between 0.0038 and 0.04 [2]. It is characterized by a clinical variability. It can be responsible for a significant articular disability in short, medium or long term [3,4]. Very few studies have been devoted to JIA in black sub-Saharan Africa [5-8] unlike the Maghreb [9-12]. The quest for data in our context motivated this study whose objectives were:

- To describe the epidemiological, clinical, paraclinical features and
- To identify the clinical forms and the therapeutic means of JIA observed in Abidjan.

2. PATIENTS AND METHODS

2.1 Place and Period of Study

We carried out a retrospective descriptive study in the rheumatology department of University Hospital Center of Cocody in Abidjan over 8 years period, from January 2005 to December 2013. The Ivory Coast has 2 department of Rheumatology: Our department is the only rheumatology department in the economic capital (Abidjan) and the other one is the department of rhumatology of Bouaké, the second city of the country economically. Our service is a 28-bed department. It is the largest rheumatology department of the West Africa. Our team consists of 3 professors of rheumatology, 4 assistant professors of rheumatology, 5 non-academic rheumatologists and physicians who study the specialty (rheumatology) whose number varies each year.

2.2 Study Population

Our department welcomes patients of all ages suffering from rheumatic diseases and of internal medicine. The records of patients aged of 16 years or less with the diagnosis of arthritis of six weeks of more, presented to university hospital center were reviewed. The children's parents in the university hospital center were informed that their records of children could be used for the realization of a study and they gave their consent. This study involved 17 children with JIA which met the Durban criteria of 1997 revisited in Edmonton in 2001 [13]. Patients with arthritis of infectious, metabolic and tumor causes have not been recruited.

2.3 Study Design

This retrospective and descriptive study was realized with a survey form helped to collect the following parameters:

- Sociodemographic parameters: Age, gender and schooling.
- Clinical parameters: Time to diagnosis, articular and extra-articular signs, complications.
- Biological parameters: Blood count, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), transaminase, serum ferritin.
- Radiological parameters: Radiographic and computer tomography scan (CT scan) lesions.
- Different clinical forms identified
- Therapeutic parameters: Anti-inflammatory drugs and background treatment.

3. RESULTS

JIA accounted for 0.03% of 4608 rheumatic diseases identified during the study period. The number of our patients included 11 girls and 6 boys mostly educated (14 cases) whose average age at the time of diagnosis was 11 years [extremes: 3-15]. Sociodemographic, clinical, biological, radiological and therapeutic data are summarized in Tables 1 and 2, depending on the clinical form of JIA. This clinical forms identified were the systemic form, oligoarticular form, polyarticular form with positive rheumatoid factors, enthesitis-related arthritis. The average delay at the time of diagnosis (average period between first symptoms and diagnosis) was 15 months. Antinuclear factors were positive in a patient. They were sought in this single patient. We have not searched anti-CCP antibodies. Rheumatoid factors were performed in 6 patients and were positive in 2 cases (polyarticular form with positive rheumatoid factors) and negative in 4 cases (systemic form). Plain radiography revealed bone erosions. Coxitis was identified by CT scan (1 case).

4. DISCUSSION

The total number of our patients was very small to make a generalization but our frequency (0.03%) appeared as a reflection of the extreme rarity of this disease in our African context. Indeed, over a period of 8 years, we had recruited 17 children. Similarly, in Nigeria, the study of Adelowo et al. [14] had involved 23 children over the same period. However, elsewhere in France, JIA was diagnosed in 48 patients over a year [15]. The low prevalence in black Africa could be explained in the one hand by the systematic orientation of all children aged under 16 years in a department of pediatrics and on the other hand by a deficit of rheumatologist and rheumatologist-pediatricians. Our study revealed a female predominance as most authors [16]. However, in the study of Weakley et al, there was a gender equality [17]. In the light of our study and that of Adelowo et al. [14] in Nigeria, JIA affected children at a rather advanced age, respectively 11 years and 12.7 years of average age. In the developed countries, the average age was significantly lower (6.6 years) [15]. This age difference could be explained by a better knowledge of pediatric rheumatology in Western countries. Therefore, the diagnosis is made early. This probably would explain the delay in diagnosis observed in our study (15 months on average). Our children were mostly in school; which demonstrated the extent of the disastrous school consequences that could result from JIA.

Table 1. Clinical data based on clinical forms of JIA

Clinical data	Systemic forms (n)	Polyarthritis with positive RF (n)	Oligoarthritis (n)	Enthesitis related arthritis (n)
Average age (years); M/F	11; 5M/7F	12; 0M/3F	04; 0M/1F	12; 1M/0F
Fever	12	03	00	01
Arthritis	12	03	01	01
IGC	12	00	00	00
Skin lesions	Evanescent rash (06)	00	00	00
Enthesopathy	00	00	00	01
Tumor syndrome	ADP(06) HPM (03) SPM (02)	00	00	ADP (01)
Complications	MAS (01) GF (02), coxitis (01), cervical involvement (06)			
Total (n=17)	**12**	**03**	**01**	**01**

N (number) M/F (male/female) IGC (impaired general condition) ADP (adenopathy) HPM (hepatomegaly) SPM (splenomegaly) MAS (macrophage activation syndrome) GF (growth failure) RF (rheumatoid factors) RF

Table 2. Biological, radiological and therapeutic data based on clinical forms of JIA

Biological, radiological and therapeutic data (n)	Systemic forms (n)	Polyarthritis with positive RF (n)	Oligoarthritis (n)	Enthesitis related arthritis(n)
Biological data				
White blood cells (n)	HPL (08)	Normal	HPL (01)	Normal
Hemoglobin	Anemia (12)	Anemia (02)	Normal	Normal
Average ESR (mm)	63.58	58.33	22	60
Average CRP (mg/l)	58	32	24	12
Transaminase	High (02)	Normal	Normal	Normal
Serum ferritin	High (06)	NP	NP	NP
Radiological data				
Pleurisy/pericarditis	Pleurisy(01)	Absent	Absent	Absent
Osteoarticular lesions	Bone erosions (02)	Bone erosions (02)	Absent	Absent
Therapeutic data				
Treatment	C + M (7) NSAID following by C+M (05)	C +M (01) NSAID following by C+M (02)	C	NSAID
Total (n=17)	**12**	**03**	**01**	**01**

HPL (hyperleukocytosis) C (Corticoid) NP (not performed)
C+M (Corticoid + Methotrexate) NSAID (non-steroidal anti-inflammatory drug)

The main complaints of our patients as well as in the study of Adelowo et al. [14] and Sen et al. [18] were fever, joint involvement and impaired general condition. The presence of these signs was due to the fact that they are more observed in the systemic form that was the dominant clinical form in our study (12 of 17). This form is characterized by fever and arthritis which with the impaired general condition of patients, reflected its severity. However, in the study of Sen et al. [18] the polyarticular form (37.5%) and oligoarthritis (31.5%) were predominant. It was the same in the study of Chipeta et al. [7] in Zambia where these last 2 forms accounted for 34.60% and 32.10% of cases respectively. This same profile is found globally in Asia except in China and Japan where enthesitis related arthritis and systemic arthritis dominated the group of JIA [19,20]. However in Europe, it is oligoarthritis which remains the main form and it is characterized by a major complication which is anterior uveitis with the risk of blindness especially when associated with the presence of antinuclear antibodies [14,21-23]. Our only case of oligoarthritis had positive antinuclear factors but showed no ocular abnormality. According to Chipeta et al, it seems obvious that differences in prevalence of oligoarthritis in Africa and the industrialized countries may simply be the result of a selection bias imposed by a shortage of pediatric rheumatology departments and therefore a lack of expertise in the field [7]. The severity of the systemic form puts at stake the prognosis for life particularly the macrophage activation syndrome that was fatal in one of our male patients [14]. Functionally, bone erosions were observed in 2 cases of systemic arthritis and 2 cases of polyarticular form with positive rheumatoid factors in our study. These 2 forms are big providers of structural destruction and are the evidence of structural joint damage in JIA [24,25]. Enthesitis related arthritis was very little diagnosed in our context. It is similar to spondyloarthropathy, particularly ankylosing spondylitis that is rare in Black Africa because of the low prevalence of antigen HLA B27 [7].

Biologically, there is no specificity except hyperleukocytosis present in the systemic form; the presence of a biological inflammatory syndrome is common to all forms of JIA [26].

Therapeutically, the vast majority of our patients (15 of 17) were treated with corticosteroids and methotrexate association and the protocol has been instituted in patients with systemic arthritis and polyarthritis with positive rheumatoid factors. Corticosteroids were the symptomatic treatment of base in these two majority forms in our study according to what is practiced in general [26,27]. Similarly methotrexate was in our study as well as in the literature, the most used background therapy [26,27]. Its suppressive effect on structural lesions and also its accessibility (low cost) argues in favor of its use. In other hands, in addition to methotrexate, other background treatments as biotherapy are prescribed in these indications particularly anti-interleukin 1, anti-

interleukin 6, anti TNF alpha etc ... [12,26,27]. Biotherapy remains limited by its too high cost in our context of lack of health insurance.

5. CONCLUSION

Juvenile idiopathic arthritis is very uncommon in rheumatology practice in Abidjan and frequently affects female children. It is expressed by febrile polyarthritis with impaired general condition and is dominated by the systemic form. The basic treatment is the corticosteroid therapy and methotrexate.

CONSENT

In our country (Côte d'Ivoire), all patients who are hospitalized in a University Hospital Center, know that their records will be use for a study. For the children, their parents have been informed so they agree automatically.

ETHICAL APPROVAL

We have submitted our protocol to the National Ethics Research Committee of Côte d'Ivoire (in French "Comité national d'éthique et de la recherche"). The protocol was approved by this committee. The study complied with the principles of the Declaration of Helsinki, 1964.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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