

Acute Rheumatic Fever: Epidemiological and Clinical Aspect in the General Medicine Department in the Health District of the Siguiri Prefectural Hospital

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Abstract

Still common in developing countries, acute rheumatic fever (ARF) is not only a disease of children and adolescents, but can also occur in adults. At this age, the diagnosis of rheumatic flare-ups can be difficult due to the frequency of other types of joint diseases and the existence of degenerative and dystrophic valve disease. In adults, the initial rheumatic attack is marked by the predominance of joint damage over cardiac damage. However, it is often at this age that rheumatic valve disease is discovered. The revised Jones criteria also find their place in the diagnosis of AAR in adults. **Objective:** To study the demographic, clinical, and biological characteristics of acute rheumatic fever (ARF) in the General Medicine Department of the Siguiri Prefectural Hospital. **Materials and Methods:** This descriptive observational study examined the demographic, clinical and biological characteristics of acute rheumatic fever (ARF) at the Siguiri Prefectural Hospital, Guinea, between April 1 and September 31, 2021 according to Jones criteria. The data were collected on a form containing sociodemographic variables (age, sex, profession), rheumatological, cardiac, pulmonary and neurological clinical signs, biological variables and treatment. **Results:** Figure 1 shows the flow of the hospital frequency of the RAA in the General Medicine Department of the Prefectural Hospital of

Sigui. During the study period, 420 patients were hospitalized, of whom 161 patients had AAR, a frequency of 38.33%. **Table 1** shows the distribution of patients diagnosed with ARB, by sociodemographic characteristics. The average age was 44.7 ± 19.78 years and the extremes of 14 and 90 years, the female sex dominated with a ratio of 0.75. The informal sector was in the majority in 45.34% of cases and most were illiterate, *i.e.* 53.42%. In our study, the incidence was lower during the dry season than during the rainy season, a hot season with high rainfall and humidity, the rainy period was a provider with a peak in August and September. The lifestyle was characterized by overcrowding in 87.58% of patients. The main complaint was fever, *i.e.* 88.82%. Rheumatological manifestations such as arthritis were 98.14%, chest pain was 37.89% (61 cases). The diagnosis was confirmed by ASLO titration in 85.71% of patients and 98.55% (136 cases) had a titration greater than 400 U/ml. **Conclusion:** The results obtained from our study show a high prevalence of acute rheumatic fever, which makes it a worrying health problem in the Sigui health district. Young female adult patients, married with an informal profession and not in school residing in Sigui were the most encountered in our study. The main functional signs mentioned by the patients were fever, cough and abdominal pain; osteoarticular pain and chest pain dominated the clinical picture. Almost all of our patients had an ASLO titer greater than 400 U/ml and a positive C-reactive protein. Our results show a high risk of spread of acute rheumatic fever within the population of Sigui. Due to the serious complications caused by acute rheumatic fever, particular attention must be paid to it by carrying out other, much larger studies in order to identify the problem of RAA.

Keywords

Rheumatic Fever, Rheumatic Heart Disease, Group A Streptococcus, Sigui Prefectural Hospital

1. Introduction

Acute rheumatic fever (AAR) is a multiorgan autoimmune inflammatory disease that occurs following group A β -hemolytic streptococcus infection in genetically predisposed individuals [1]. This inflammatory reaction occurs approximately 10 to 21 days after a throat infection [2]. Patients develop carditis, arthritis, chorea, erythema marginatum, and subcutaneous nodules [1].

Long considered a disease of childhood and adolescence, RAA also exists in adults; even in the 4th and 5th decades of life.

Indeed, according to the World Heart Federation (WHF) in 2013, analysis of statistics concerning the distribution of pathologies linked to streptococcus in 2005 shows that there were at least 15.6 million cases of CR worldwide, including 1.9 million with a history of RAA and each year, 470,000 new cases of RAA are recorded and 230,000 deaths are attributed to RC [3].

In sub-Saharan Africa according to the VALVAFRIC study (registry of

rheumatic valve disease in West and Central Africa), Senegal had the highest number of rheumatic heart diseases in 2015, *i.e.* 462 cases followed by the Republic of Guinea 358 cases, from Cameroon 301 cases. Cases, Mali 118, Ivory Coast 80 cases, Nigeria 51 cases and Togo 15 cases [4].

We undertook to take stock of this condition, diagnosis and delicate treatment, in an African context south of the Sahara.

The objective of this work was to describe the demographic and clinical aspect of Acute Joint Rheumatism in the General Medicine department in the health district of the Siguiro prefectural hospital.

2. Objective

To study the demographic, clinical and biological characteristics of acute rheumatic fever (ARI) in the general medicine department of the Siguiro prefectural hospital.

3. Materials and Methods

Descriptive and observational study of patients with acute rheumatic fever (AAR) in the general medicine department of the health district of the Siguiro prefectural hospital. Recruited in the period from January 1, 2021 to December 31, 2022 according to Jones criteria.

The General Medicine department of the Siguiro Prefectural Hospital is a center for the treatment of autoimmune diseases and other conditions. The prefecture of Siguiro is located 798 km from the capital Conakry and 127 km from Kankan, the capital of the administrative region. It includes the urban commune of Siguiro. It is limited to the North and the East to 207 km by the Republic of Mali where most of the examinations were carried out. During this study 161 patients were recruited.

Data were collected on a form containing sociodemographic variables (racial origin, age, sex), clinical signs (rheumatological, hematological), radiological, immunological and treatment. Incomplete medical records were not included in the study. The date of diagnosis was defined as the date when rheumatic fever (ARF) was first mentioned in the medical record.

Joint damage was defined by joint pain and swelling, impotence of the lower limb.

Skin involvement is assessed by the existence of erythema marginatum and subcutaneous nodules.

The neurological damage was noted by the existence of Sydenham's chorea.

Cardiac involvement was assessed when there were clinical signs of heart failure documented on cardiac Doppler ultrasound during the evolution of this condition after eliminating any other cause that could explain the heart disease. The titer of ASLO, CRP, were also reported as elevated, present or not achieved and the titer of antinuclear antibodies was specified. Data analysis was carried out using the Epi Info software. The data were collected on a form including sociodemographic

variables, clinical, radiological and biological signs.

Study population:

It focused on the files of patients suffering from acute rheumatic fever, followed in the general medicine department in the health district of the Siguiri prefectural hospital in Guinea.

Inclusion criteria:

The diagnosis was made based on the Jones criteria.

- ♣ Two (2) major criteria and one (1) minor criterion in the presence of evidence of a streptococcal infection where;

- ♣ Two (2) minor criteria and one (1) major criterion in the presence of streptococcal infection.

Non-inclusion criteria:

Not all patients suffering from Acute Joint Rheumatism with an incomplete file were included in the study.

Data collection and analysis:

Data collection was carried out using a pre-established survey form. Data analysis was carried out using Epi-info software version 7.2.2.6. Microsoft Word and Excel software were used for text processing and the creation of tables and figures.

4. Results

Figure 1 shows the flow of the hospital frequency of the RAA in the General Medicine Department of the Prefectural Hospital of Siguiri. During the study period, 420 patients were hospitalized, of whom 161 patients had AAR, a frequency of 38.33%.

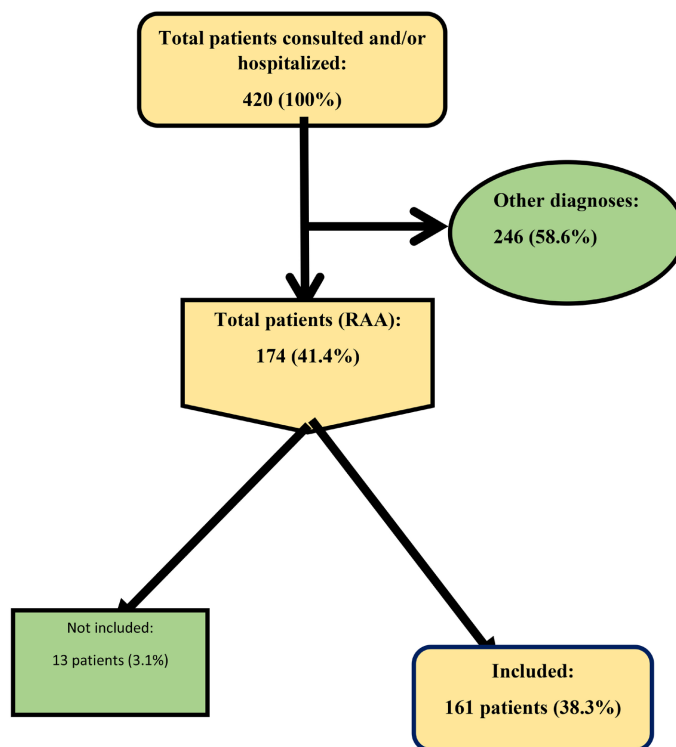


Figure 1. Distribution of patients according to frequency.

Table 1 shows the distribution of patients diagnosed with ARB, by sociodemographic characteristics.

Table 1. Distribution of patients diagnosed with RAA in the General Medicine Department of the Sigüiri Prefectural Hospital according to sociodemographic characteristics.

Socio-demographic characteristics	Number	Proportion (%)
Age (year)		
<15	1	0.6
15 - 24	27	16.8
25 - 34	30	18.6
35 - 44	21	13.1
45 - 54	27	16.8
55 - 64	26	16.1
65 - 74	17	10.6
>74	12	7.4
Mean age = 44.7 ± 19.78 years Extremes: 14 years to 90 years		
Sex		
Male	69	42.9
Female	92	57.1
Sex-ratio = 0.75		
Origin		
Urban	114	70.8
Rural	39	24.2
Other prefectures	8	5
Level of study		
Graduate studies	17	10.6
Secondary education	31	19.2
Primary level	27	16.8
Unschooling	86	53.4
Socio-professional category		
Informal Sector	73	45.3
Housewives	27	16.8
Pupils/students	23	14.3
Formal sector	19	11.8
Unemployed	19	11.8
Marital status		
Married	110	68.3
Widowers	26	16.2
Singles	25	15.5

The average age was 44.7 ± 19.78 years and the extremes of 14 and 90 years, the female sex dominated with a ratio of 0.75. The informal sector was in the majority in 45.34% of cases and most were illiterate, *i.e.* 53.42%. The rainy period was beneficial with a peak in August and September.

The different antecedents, lifestyle, clinical manifestations and biological examinations are listed in **Table 2**: The vast majority of patients had recurrent angina (57.76%).

Table 2. Summary of the distribution of patients according to history, lifestyles, clinical signs, and biological examinations.

History, lifestyles, clinical signs, biological	Effective	Proportion (%)
Angina	93	57.76
2 times	71	44.09
1 time	22	13.66
Previous treatment (Peni G: 1fl/semaine)	8	4.9
Erysipelas	4	2.48
1 time	3	1.86
2 times	1	0.62
None	55	34.16
Others	9	5.59
Others: Bacterial otitis, scarlet fever, periodontitis, dental abscess.		
Way of life		
Hand/spoon	94	58.39
Hand	67	41.61
Promiscuity		
Overcrowding	141	87.58
Poor living conditions	18	11.18
Poor hygiene conditions	11	6.83
Household water type	161	100
Pump Water	153	95.03
Well water	6	3.73
Tap water	2	1.24
Type of drink	55	34.16
Beverage	37	22.98
Fruit juice	18	11.
Physical signs		
Osteoarticular pain	158	98.14
Joint swelling	11	6.83
Impotence of lower limbs	1	0.62
Dyspnea on exertion	39	24.22

Continued

Breath	7	4.3
Sydenham chorea	18	11.18
Erythema Marginata	5	3.11
Subcutaneous nodule	4	2.48
Others*	1	0.66
Others: odynophagia, headaches.		
Biological examinations		
ASLO	161	100
ASLO titration	138	85.71
<400 U/ml	2	1.45
>400 U/ml	136	98.55
CRP	148	91.92
Negative	58	39.19
Positive	90	60.81
ASAT	139	86.33
Pupil	34	24.46
Normal	105	75.54
Rheumatoid Factors	31	19.25%
Negative	27	87.10%
Positive	4	12.90

The lifestyle was characterized by overcrowding in 87.58% of patients.

The clinical manifestations were dominated by chest pain 98.14% followed by fever or 88.82% and osteoarticular pain 37.89%.

The diagnosis was confirmed by ASLO titration, *i.e.* 85.71%. 98.55% of patients had a titer of 400 U/ml.

5. Discussion

We descriptively analyzed the files of patients hospitalized for Acute Joint Rheumatism (AAR) from April 1 to September 31, 2021.

During our study period, 420 patients were hospitalized, among whom 161 patients presented RAA, representing a prevalence of 38.33%.

This frequency was similar to that of Rakotomalala HN *et al.* [5] in Madagascar who reported in their study on osteo-articular and/or abarticular pathologies at the Rheumatology Unit of Antananarivo University Hospital which found 33.8% of RAA. Furthermore, other authors have reported a much lower incidence of RAA, Kakpovi K *et al.* [6] reported 1.15% of rheumatological conditions in patients aged less than 16 years, in the Rheumatology Department of the Sylvanus Olympio University Hospital in Lomé between October 1989 and July 2016.

The average age was 44 years old. Our results are similar to those of Rakotomalala

HN *et al.* [5] who reported a mean age of 49 years.

Acute rheumatic fever is classically a childhood disease; our result could be explained by the recurrence of the infection up to a certain advanced age due to lack of prophylaxis and unfavorable living conditions.

Rheumatism affects both sexes with a female predominance. This female predominance is described in the studies of Kimbally KG *et al.* [7] who reported a female predominance of 52.7% among schoolchildren in Brazzaville. According to Kakpovi K *et al.* [6] who reported that the three children suffering from AAR in their study were all girls.

Patients with an informal profession and no education were the most represented in our series. Similar proportions were reported in the VALVAFRIC study 35% and 41.5% of cases [4]. Our result could be explained by the low socioeconomic level of the populations, which is an important factor in the occurrence and evolution of RAA.

The majority of our patients resided in the town of Siguiiri. Our result is comparable to those reported by Daifallah N *et al.* [8] in Morocco and Rakotomalala HN *et al.* [5] in Madagascar, with respective proportions of 50.9% and 72.7%.

This could be explained by the fact that the study was carried out in Siguiiri on the one hand and on the other hand by the fact that the Siguiiri Prefectural Hospital is the reference center for the Siguiiri health district.

The seasonality of the RAA is not complete in our study since it only covers 6 months, however, we noted an increase in cases from April to September. A seasonal increase in RAA is observed by other authors, notably Haller S *et al.* [9] reported a significant frequency of RAA during the cold season in temperate zones. Daifallah N *et al.* [8] in Morocco in 2010 reported this same seasonal frequency in the autumn-winter period with 70% of cases. This could be explained by the fact that the very favorable rainy winter period is the crisis period for RRA because of the humidity and freshness favorable to infections and relapse into a condition of promiscuity and unsanitary conditions. Recurrent angina was the main antecedent of AAR found in a large number of our patients. Our result is superimposable to that of Kinda G *et al.* [10] in Burkina Fasso in 2018 who reported this same predominance of recurrent tonsillitis with a proportion of 90.3%.

The lifestyle of our patients was largely dominated by the use of pump water followed by overcrowding and the use of the hand/spoon. The results of Daifallah N *et al.* [8] corroborate ours with 65.9% of patients having an unfavorable socioeconomic level. This results in the conditions favorable to the proliferation of infections which are characteristic of life in developing countries.

Osteoarticular pain was the main functional sign mentioned by our patients, followed by chest pain and dyspnea on exertion. Our result was comparable to that reported by Zaouali RM *et al.* [11] in Tunisia and Diao M *et al.*; in Senegal in 2005 with respective proportions of 72% and 47.05% [12].

Almost all of our patients had an ASLO titer greater than 400 U/ml and a positive C-reactive protein. These examinations are reported in the literature by

several authors, so our result is similar to that reported by Daifallah N *et al.* [8] *i.e.* respective proportions of 90% of cases of ASLO titer greater than 200 IU/ml and 59.3% of cases of positive C-reactive protein.

6. Conclusions

The results obtained from our study show a high prevalence of acute rheumatic fever, which makes it a worrying health problem in the Siguiiri health district.

Young female adult patients, married with an informal profession and not in school residing in Siguiiri were the most encountered in our study.

The main functional signs mentioned by the patients were fever, cough and abdominal pain; osteoarticular pain and chest pain dominated the clinical picture.

Almost all of our patients had an ASLO titer greater than 400 U/ml and a positive C-reactive protein.

Our results show a high risk of spread of acute rheumatic fever within the population of Siguiiri.

Due to the serious complications caused by acute rheumatic fever, particular attention must be paid to it by carrying out other, much larger studies in order to identify the problem of RAA.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Survey Sheet

N° Date:/..../202...

I. SOCIODEMOGRAPHIC INFORMATION

Age (year): years Sex: M F

Origin: Rural Urban Excluding Siguirí

Marital status:

Bride Bachelor Divorcee Widower

Occupation:

Pupil/Student Farmer/Breeder Housewife

Liberal Official

I. HISTORY:

Strep throat Erysipelas

Others, specify

- I. LIFESTYLE

- Power supply:

Hand Picker Both (Hand/Gatherer)

Promiscuity Poor living conditions Overcrowding

Hygiene conditions

Type of household water and daily drinks:

II. CLINICAL SIGNS ON ADMISSION

a) Functional signs:

Fever Cough Abdominal pain Dyspnea

Osteoarticular pain Breath Chest pain

Others

b) Physical signs

- Signs of arthritis

Sydenham chorea Subcutaneous nodules Erythema marginatum

Others

VI. BIOLOGICAL EXAMINATIONS

ASLO: Positive Negative

Rheumatoid factor: Positive

ASLO titration: >200 <200 Negative

ASLO Antibody: Positive Negative

CRP: Positive Negative

Transaminases (AST).....IU