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Evaluation of the Quality of Care Children Sickle Cell from 0 to 15 Years Old in the Pediatrics Department of the Ignace Deen University Hospital in Conakry

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Abstract

Introduction: Sickle cell disease is a chronic disease primarily affecting the black population, associated with significant morbidity and mortality. The aim of this work is to evaluate the quality of care provided. Children sickle cell from 0 to 15 years old in the Pediatrics department of the Ignace Deen University Hospital in Conakry. **Materials and methods:** We conducted a descriptive cross-sectional study of a duration of 6 month from December 15, 2020 to May 14 2021. **Results:** The average age of the patients was 6.38 ± 4.02 years with a sex ratio of 0.69. Abdominal examinations of children with sickle cell disease At service of Pediatric cases were characterized by: fever (100%), severe anemia (52.46%), physical asthenia (54.10%), abdominal pain (42.62%), and jaundice (40.98%). The predominance of school-aged children (63.93%), the majority of patients residing in the main town (80.33%), and a history of consanguinity (52%) were also noted. The predominant first-line treatment was: Hyperhydration and analgesics (100%), antibiotics (96.72%), and blood transfusion (80.33%). The level of technical competence found was good (63.64%); acceptable (18.18%); and poor (18.18%). **Conclusion**: This study shows that the quality of care for sickle cell disease in children is complex and medically sound and acceptable. However, the human and infrastructural aspects need strengthening, implying the need for subsidies to cover the costs of examinations and treatments for children with sickle cell disease.

Keywords

Evaluation, Management, Sickle Cell Disease, Pediatrics, Conakry

1. Introduction

Sickle cell disease is a real public health problem with a high prevalence of major SS forms [1].

Clinically, it manifests as acute and chronic hemolytic anemic episodes, vaso - occlusive crises (VOCs), and infectious syndromes. and multiple functional degenerations [2].

Although it is a chronic disease, it is potentially serious, as it is characterized by the occurrence of infectious, ischemic, and anemic complications: Vaso -occlusive crises, acute chest syndrome, priapism, strokes, neurosensory disorders, liver, splenic, and renal disorders, and acute vertigo or sudden deafness, cardiopulmonary disorders, gallstones, ulcers cutaneous, osteonecrosis which may affect functional and vital prognosis [2] [3].

These complications require a thorough diagnostic approach and prompt, appropriate management. effective and control of triggering factors to thus circumvent the high risk of morbidity and mortality to which they expose sickle cell patients [3].

In the United States, approximately 100,000 people carry sickle cell disease, causing multi-system morbidities, including a risk of early death [4].

In France in 2014, 485 major sickle cell syndromes (SDM) were detected [5].

In Africa, the prevalence of sickle cell trait varies between 1 and 45% depending on the country [6]. Hence 500 000 children are born with the sickle cell disease of which 60% has 80% die before the age of 5 due to lack of early screening and adequate care [7].

In Cameroon, out of a population of approximately 15 million, 25 to 30% have sickle cell disease, of which 2 to 3% are homozygous [2].

Gabon is located in an area of very high prevalence: 24% of subjects carry the hemoglobin S (HbS) trait and the number of homozygous patients is estimated at 2.2% of the population [8].

At Benign there prevalence East of 22.3%, of which 4% are homozygous [9].

At Togo, the prevalence East of 16.1%, with 3 has 5% of shapes major [7]. In Mali, the prevalence is estimated at 12% with 3% homozygous [10]

In Senegal, the prevalence of hemoglobin S is estimated at 10%, of which 1% are homozygous forms [11].

In Guinea, Camara E *et al.* in 2019 found 7.8% of major sickle cell syndrome (MSS) [12], Diakité M *et al.* in 2020 have reported a sickle cell prevalence of 12.6% in the Hematology department of the Ignace Deen University Hospital in Conakry. [13]

But these different studies have addressed the prevalence along with certain

characteristics but have rarely focused on assessing the quality of care, thus motivating the present work.

2. General Objective

Evaluate the quality of care children sickle cell Children aged 0 to 15 years in the Pediatrics Department of the University Hospital Ignace Deen from Conakry (Guinea).

3. Materials and Methods

Kind and duration study: It was of a study trans of kind description of a duration of 6 month from December 15, 2020 to May 14 2021.

Population study: She was consisting of all patients hospitalized sickle cell patients, and all service providers having a child with sickle cell disease was seen for consultation.

Criteria of selection:

- Inclusion criteria: This study included all hospitalized sickle cell patients aged 0 to 15 years, regardless of sex or origin, diagnosed based on the Emmel test/hemoglobin electrophoresis, who received treatment. and all the service providers who have taken taking care of a child with sickle cell disease during the study period.

- Exclusion criteria: The following were not included in this. This study excludes all patients diagnosed with pathologies other than sickle cell disease and all healthcare providers. not being present during the study period. But also non-consenting parents or guardians.

Fashion of recruitment: Recruitment was exhaustive and included all sickle cell patients and all providers meeting the selection criteria during our study period.

The quality of care was assessed based on ten (10) elements, namely:

1) The level of satisfaction of parents/guardians with respect to the reception: this concerns the communication between the health worker and the mother/guardian during the consultation:

- ✓ Welcome (Good, (acceptable, bad)
- ✓ THE advice data (Good, acceptable, bad)
- ✓ THE appointment of follow up of the child (Yes or not)
- ✓ Information of diagnosis of the child by the agent of health: Yes or No

2) Accessibility geographical considerations included:

- THE time put for arrive at center: lower has 30 minutes or superior at 30 minutes
- Means used for arrive at center, as: foot, transportation shared transport, motorcycle taxi, dugout canoe, personal vehicle…
- There residence: as area urban (Conakry) or rural (out Conakry)

3) Parents'/guardians' knowledge of sickle cell disease:

- Forms of sickle cell disease include: SS, AS, SC, S/β-thalassemia…

- THE fashion of transmission of there sickle cell disease: hereditary, born knows not,
- Signs of sickle cell disease in children aged 0 to 15 years: dactylitis, abdominal pain, pain bone marrow, jaundice, anemia, dizziness, physical asthenia, dyspnea, chest pain, edema of the limbs or other symptoms.
- Factors triggering sickle cell crises in children aged 0 to 15 years: temperature change, stress, dehydration, infection, hypoxia, cold, intense physical exercise;

4) Legal recourse in case of a sickle cell crisis. This will involve: health structure or self-medication (pharmaceutical or traditional medicines).

5) There biology:

❖ Blood count: is the quantitative and qualitative analysis of the formed elements of blood.

❖ Emmel test or sickle cell test: Examination of the blood smear allowing observation of sickle-shaped red blood cells.

❖ Hemoglobin electrophoresis: is a method of separating electrically charged particles by differential migration under the action of an electric field.

The judgment was based on financial and geographical accessibility conditions.

6) Treatment receipts:

❖ Acid folic

❖ Pain relievers or anti-inflammatories: paracetamol, tramadol diclofenac, ibuprofen

❖ Hydroxyurea or hydroxycarbamide is a particularly important molecule involved in the treatment of sickle cell anemia; it stimulates the synthesis of fetal hemoglobin (HbF), composed of 2 alpha chains and 2 gamma chains.

❖ Transfusion blood: Yes Or No

❖ Antibiotic

❖ Hyperhydration: Salt Serum 0.9%, Glucose Serum 5%, Bicarbonate Serum 1.4%;

7) Identification of provider:

- Qualification: She will concern THE title of staff either pediatrician, currently undergoing specialist training, general practitioner or intern.

8) Organization of service: She will wear

- Permanent service 24 hours on 24 hours;
- Kits of PEC of the EMERGENCIES at the house of THE sickle cell during the guard;
- Reagents and diagnostic tests (Emmel's T) for sickle cell disease during guard duty, hemoglobin electrophoresis;

9) Availability in materials, reagents, drugs: they have door on:

- Endowment in medications and reagents regular.
- Materials: Gloves, lab coat, watch or clock, pen /marker or pencil, microscope, TE kit, Hemoglobin electrophoresis, oxygen cylinder with child mask, child blood pressure monitor, stethoscope, scale, thermometer.

10) Tasks and actions of the consultant: they have door regarding staff behav-

ior in the following actions:

- To welcome GOOD there mother of the child
- Pay attention
- Talk with kindness
- Date of beginning of the signs
- Treatment prior
- Take THE parameters
- Respect there confidentiality of there consultation
- Inform the mother of diagnosis of the child
- Explain the use of the drugs
- Explain THE effects secondary of the drugs
- Se to reassure of there understanding of the mother by report to the treatment
- Advise there mother to increase THE liquids during there disease
- Explain when to come back immediately
- Explain when to come back for their visit of follow up
- Identify the signs of gravity of there sickle cell disease

11) Availability and functionality of the infrastructure: he it was:

- Room of consultation
- Rooms hospitalization
- Room of guard
- Laboratory
- Pharmacy

Note: These different items have summer judged according to their terms in Good, acceptable, and bad.

Good: when THE observed patterns are superior or equal has 75%. Acceptable: when the observed conditions **are** between 50 and 74%; **Poor:** when the observed values are lower 50%.

Variables, statistical studies

Our variables were both quantitative and qualitative.

The data was collected through direct interviews with parents/guardians and often older children, but also through careful analysis of files for additional information.

Then they were entered and analyzed using Excel, Word and Statistics Package for Social Science (SPSS) version 21.0.

Regarding the ethical issue, the anonymity and confidentiality of our patients were respected and the free informed consent, written or verbal, of the patients was strictly required; thus, the data collected is used only for scientific purposes.

4. Results

- Our study included 63 patients, of whom 61 had sickle cell disease and two (2) were excluded due to lack of consent from their guardians. Their socio-demographic characteristics (Table 1) show a mean age of 6.38 years ± 4.02 years. 59.02% were female and 40.98% male, with a sex ratio of 0.69. The 1-5

year age group was the most represented (49.18%). The study involved 29 healthcare professionals: 5 pediatricians, 4 residents in specialization training, 6 general practitioners, 4 interns, and 10 nurses. They comprised 14 men (48.27%) and 15 women (51.72%), with a sex ratio of 0.9 and a mean age of 33 years.

Table 1. Distribution of children with sickle cell disease according to sociodemographic data at service of pediatrics of the Ignace Deen University Hospital of 15 December 2020 at May 14, 2021.

Sociodemographic data patients/children	n = 61	%
Slices age		
1 - 5 years	30	49.18
6 - 10 years	20	32.79
11 - 15 years	11	18.03
Sex		
Female	36	59.02
Male	25	40.98
Residence		
Urban	49	80.33
Rural	12	19.67
Ethnicities		
Fulani	21	34.43
Soussou	18	29.51
Malinke	19	31.15
Kissi	3	4.92
Level of schooling of the children		
Schoolchildren	39	63.93
No schooled	22	36.07

Age AVERAGE 6.38 ± 4.02 Extreme Years 1 and 15 years; Sex ratio = 0.69.

The most common reason for consultation was fever (100%) (Table 2). First-line treatment was medical in 67.21% of cases, predominantly the combination of paracetamol and ibuprofen (34.43%) (Table 3). Treatments received were: 100% hyperhydration and analgesics, 96.72% antibiotics, and 80.33% blood transfusions (Table 4). Geographic accessibility to the Pediatric Department was fair (52.46%) (Table 5).

Table 2. Frequency according to the reasons for consultations for children with sickle cell disease at service of pediatrics of the Ignace Deen University Hospital 15 December 2020 at May 14, 2021.

Patterns consultation	Proportion	%
Jaundice	25	40.98
Headache	10	16.39
Fever	**61**	**100**
Asthenia physical	**33**	**54.10**
Pain abdominal	26	42.62
Pain osteoarticular	16	26.23
Crises convulsive	7	11.48
Dizziness	10	16.39
Pain thoracic	5	8.20
Dyspnea	6	9.84
Vomiting	7	11.48
Diarrhea	3	4.92
Edema of the feet	14	22.95
Crying	9	14.75

Table 3. Distribution according to appeal of treatment of first intention parents of children with sickle cell disease in the pediatric department of the Ignace Deen University Hospital in Conakry.

First appeal of support	n = 61	%
Treatment medical	41	67.21
Treatment medical and treatment	**17**	
Traditional		**27.87**
Treatment traditional	3	4.92
Medicine taken has residence		
Paracetamol	**16**	**26.23**
Paracetamol/Ibuprofen	21	34.43
Paracetamol/Acid folic	4	6.56
Acid folic	2	3.28
Paracetamol/Acid folic acid/NSAIDs/	10	
Tramadol		16.39
NSAIDs (ibuprofen)	1	1.64
paracetamol, decoction	5	8.20
Decoction	3	4.92

Table 4. Distribution according to the treatment received by THE Children with sickle cell disease in the pediatric department of the Ignace Deen University Hospital in Conakry.

Treatment received	n = 61	%
Hyperhydration	61	100
Antibiotic	59	96.72
Transfusion	49	80.33
Acid folic	25	40.98
Pain reliever	61	100
Anti -malaria	14	22.95
Hydroxyurea	08	13.11

Table 5. Distribution according to accessibility geographical at service of pediatrics at the Ignace Deen University Hospital in Conakry.

Accessibility geographical	n = 61	%
Good	7	11.48
Average	21	34.43
Fair	33	54.09
Time put to arrive		
1 - 10 min	1	1.64
11 - 20 minutes	3	4.92
21 - 30 minutes	11	18.03
>30 min	46	75.41
AVERAGE used		
Motorcycle	3	4.92
Feet	1	1.64
Transportation common	49	80.33
Car private	8	13.11

5. Discussion

We had achieved a study trans of kind description of a duration of 6 month from December 15, 2020 to May 14 2021.

The objective of this study was to evaluate the quality of care children sickle cell from 0 to 15 years old in the Pediatrics department of the Ignace Deen University Hospital in Conakry.

In our study, age average (6.38) was close of the one of Barry IK coll. In Guinea in 2019 [14] who found an average age of 7 years.

The female predominance found in our study (59 0.02%; 0.69) is contrary to those reported by Diakité AA *et al.* in 2019 in Mali [15] and Dodo R *et al.* in 2018

in Benin [16] who respectively had a male/female sex ratio of 1.46 and 1.55.

This could be explained by the predominance of women in the general Guinean population.

The predominance of school-aged children (63.93%) differs from that of Diakité M *et al*. Guinea in 2020 [15] and similar to that of Dodo R and colleagues. In 2018 in Benin [17] which found respectively 42% and 55.6% of children enrolled in school. This could be explained by the the fact that young teenagers would be more predisposed to sickle cell crises.

The majority of our patients reside in the capital (80.33%) in Cameroon, which corresponds to that of Chetcha CB *et al*. in 2018 [3] and Diakité M and colleagues in Guinea in 2020, in his doctoral thesis in medicine [13] which reported that 82.60% and 82.67% respectively came from the capital city. This could be explained by the proximity of the Ignace Deen Hospital, which is located in the heart of Conakry, and that Other users often come by referral.

In our study, approximately half of the parents (45.90%) had no knowledge of methods for preventing seizures.

This result could be explained by the fact that user education is not adequate and more effort is needed to raise public awareness about the disease in general and about the factors triggering sickle cell crises in particular.

The first resort used by patients during crises (67.21%) is comparable to that of Diallo MY in his doctoral thesis in 2013 in Mali [17], and Seck I *et al*. [18] who found medical treatment rates of 78.26% and 88.6% respectively. This could be explained by educating users to go to the hospital at the first signs.

The technical competence found in our study was good (63.64%), acceptable (18.18%), and poor (18.18%), which is in some places comparable to that of Diallo. MY in Mali in 2013 [17], which found 66.7% respectively; 27.8% and 5.6%. Generally, in our structures, the technical competence of the service providers is unequivocal but can encounter a problem related to financial accessibility because the costs are borne by the families.

6. Conclusion

This study reveals that the quality of care for children with sickle cell disease is complex. While it was good and acceptable in the areas addressed, particularly the organization of care and access to supplies and medications, further efforts are needed to improve this quality and ensure the sustainability of these achievements. This includes the implementation of universal health coverage for these chronic congenital diseases to alleviate the burden of care on families.

Author Contributions

All authors contributed to the development of this article. The authors declare that they have read and approved the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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