A Period Prevalence Study of Acute Stroke among Children Living with Sickle Cell Disease Admitted to the Zambia's UTH Children's Hospital

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INTRODUCTION

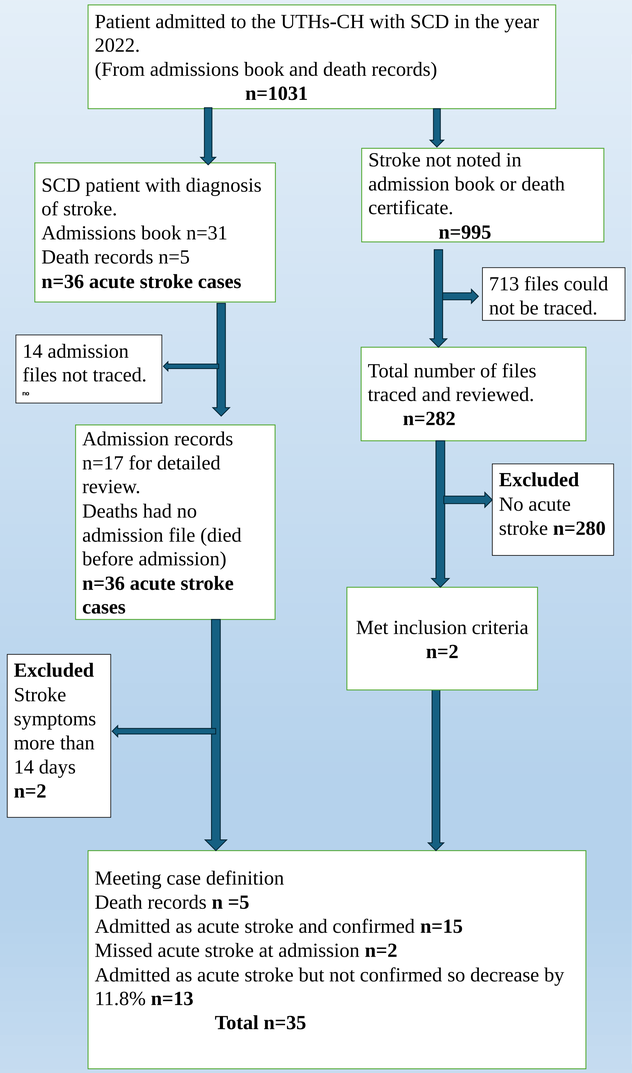
Sickle cell disease (SCD) is a major problem in Africa. Approximately 300,000 children are born with SCD worldwide with a major burden in sub-Saharan Africa accounting for more than 75% of all cases. Among affected children, 50-90% will not attain their fifth birthday. Without screening and preventive care, approximately 10% of SCD patients will have symptomatic stroke in the first two decades of life. The prevalence of stroke in SCD in Africa is estimated to range from 2.9 to 16.9%. Although the burden of SCD-associated stroke is a significant concern, epidemiological data is lacking in Zambia. To better understand this and help inform a planned prospective study, we conducted a retrospective record review to estimate the burden of SCD-associated acute stroke among children admitted to University Teaching Hospital's Children's Hospital (UTHCH).

OBJECTIVES

- To conduct a retrospective record review to identify children admitted with SCD to University Teaching Hospitals-Childrens Hospital (UTHs-CH) over a 12-month period.
  - To identify all acute stroke victims among those admitted with SCD.
  - Describe their demographic and clinical characteristics including neuroimaging findings, where applicable.
  - Determine their inpatient clinical mortality and morbidity outcomes.

MATERIALS AND METHODES

Enrollment flow chart



RESULTS

Demographic and Clinical Date for Children with SCD and Stroke whose Inpatient Records were available for Review (n=17)

Patient characteristic	
Age at admission in years, mean (range)	7 (3-15)
Age in months at SCD diagnosis, mean (range)	32 (6-96)
Sex (Female), n (%)	13 (77)
Referral, (%)	
-Self-referrals	10 (59)
-First level hospital within Lusaka district.	2 (12)
-Outside Lusaka district	5 (35)
Residence in Lusaka district, n (%)	11 (65)
Stroke symptoms, n (%)	
-Motor deficit	9 (50)
-Seizure	4 (24)
- Speech deficit	3 (21)
- Headache	1 (5)
Time to initial blood transfusion (n=12), n (%)	
->48 hours	6 (50)
-24 to 48 hours	2 (17)
-12 to 24 hours	1 (8)
-6 to 12 hours	1 (8)
- <6 hours	2 (17)
History of vaso- occlusive crisis in past year, n (%)	11 (65)
History of acute chest syndrome in the last one year, n (%)	1 (6)
History of previous stroke, n (%)	8 (47)
History of treatment with hydroxyurea, n (%)	9 (53)
On hydroxyurea on admissions, n (%)	3 (18)
Length of stay, n (%)	
-More than 7 days	12 (70)
-4 to 7 days	2 (18)
-1 to 3 days	2 (12)
Hemoglobin concentration (g/dl)	7.6 (1.8)
White cell count (k/ul)	18.5 (8.2)
Platelet count (k/ul)	365 (147)
Absolute neutrophil count ($x10^9$) (n=16)	13 (6.3)
Mean corpuscular volume (fl)	89 (9.5)
Hematocrit (%)	23 (5.9)
Hemoglobin S (%)	
-Female, n=3	74.5 (21.8)
-Male, n=3	38.4 (53.0)
Hemoglobin F (%)	
-Female, n=3	8.2 (6.)
-Male, n=2	1.4 (4.3)

CONCLUSIONS

Several limitations are evident in this retrospective study, primarily related to the lack of data available for review due to missing admissions data and untraceable inpatient files. Nonetheless, this fairly rapid, low-cost study provided some fundamental insights that have informed our planned prospective study.

The estimated proportion of children presenting with SCD who have had or will have an acute stroke during the admission was 3.6% and their mortality rate is ~14%. Children over one year should be included in future, prospective studies. All deaths we identified during our search strategy died too soon after presentation to even be admitted. This highlights the need for future work to include careful "time in motion" examination of the care children presenting with acute stroke receive

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