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Basic Haemostatic Profile of steady state patients with Sickle Cell Anaemia in Ibadan, Nigeria

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Abstract

Bleeding is a known complication of sickle cell anaemia and aspects of the challenge includes heamorrhagic stroke, haematuria and vitreous haemorrrhage. The laboratory pictures of bleeding parameters in the patients need to be investigated periodically. We investigated some of these parameters by standard methods. The patients with sickle cell anaemia in steady state had higher level of platelet count than the controls, 307.94±1.19 vs 282.50±9.15 (x10 9/L). The difference in result was statistically significant, $p<0.05$. But the results in the test for prothrombin time (16.70±1.92 vs 16.10±1.59) and activated partial thromboplastin time (34.38±3.19 vs 35.20±3.97) seconds showed no significant differences in both cases, $p >0.0$. These results indicate that the results of clinical care were achieved with respects to haemostasis in the patients. In conclusion, patients with sickle cell anaemia (SCA) in steady state had normal basic haemostatic profile.

Keywords: Bleeding, Haemostatic profile, sickle cell anaemia, platelet count.

Introduction

Sickle cell anaemia is an inherited haemoglobinnopathy resulting in the abnormal polymerization of the β-globin protein and sickling of the red blood cells (1). Bleeding in patients with sickle cell anaemia (SCA), includes neurological, renal and ocular bleeding complications (2). Patients with sickle cell anaemia have been found to have an aberrant coagulation profile. One of the primary elements hypothesized to contribute to the vaso-occulussive crisis that characterized SCA is coagulopathy (3,4). Although patients with sickle cell anaemia can experience multiorgan and organ-specific bleeding (5,6).

Patients with sickle cell anaemia in Ibadan continue to suffer health challenges such as septicaemia and maternal mortality (7,8). In this study, we determined some haemostatic profile of patients with sickle cell anaemia in steady state to know the current status of their coagulation profile.

Materials and Methods

In this study, patients with sickle cell anaemia in steady-state, diagnosed by standard methods (9) at the University College Hospital, Ibadan, Nigeria were recruited into the study. Seventy-one (71) patients and sixty (60) age and sex-matched controls were recruited.

After ethical approval was obtained from the local Ministry of Health and informed consent obtained from the subjects, 5ml of blood was obtained in each case by venipuncture after informed consent.

All laboratory procedures and tests were done by standard methods (9).

For statistical evaluations, X^2 and student's t-test were performed on the data using a software (SPSS 23.0). $p<0.05$ was inferred to be statically significant.

Results

Table 1: shows the age distribution of the patients and control subjects. There were 71 patients and 60 age-matched control.

Table 1: Age distribution of the patients with sickle cell anaemia (SCA) and apparently age-matched healthy controls without the S gene.

Age groups	SCA Patients No (%)	Controls No (%)
20 – 24	6 (8.5)	14 (23)
25 – 30	10 (14.1)	12 (20)
31 – 34	16 (22.5)	19 (32)
35 – 40	31 (43.7)	10 (17)
41 – 45	8 (11.3)	5 (8.3)
Total	**71**	**60**
	131	

Table 2: shows comparisons between the haematological results of the steady-state sickle cell patients and controls. The patients had PCV value of 22.63 ± 99, WBC of 13.99 ± 3.14, and platelet of 307.94 ± 1.19 as against corresponding values of 39.70 ± 4.14, 5.01 ± 1.61 and 282.50 ± 9.15 for controls. The differences in these results between the patients and controls were statistically significant, $p < 0.05$.

Table 2: Some haematological results of the patients with SCA and the controls

Parameters	Controls N = 60	SCA N = 71	P value
PCV (%)	39.70 ± 4.14	22.63 ± 3.99	< 0.05
WBC ($X10^9$/L)	5.01 ± 1.61	13.99 ± 3.14	< 0.05
PIt ($X10^9$/L)	282.50 ± 9.15	307.94 ± 1.19	< 0.05
PT (Secs)	16.70 ± 1.92	16.10 ± 1.59	> 0.05
APTT (Secs)	34.38 ± 3.19	35.20 ± 3.97	> 0.05

For haemostatic results, the patients had prothrombin time test result of 16.10 ± 1.59 secs and Activated Partial Thromboplastin Time result of 35.20± 3.97 secs as against corresponding results of 16.70 ± 1.92 for PT and 34.38 ± 3.19, APTT for controls. The differences in these two results were not statistically significant p > 0.05.

Discussion

This study showed an increase in the plateled count of the patients with sickle cell anaemia in steady-state compared to controls. This is in agreement with a previous report by Piel *et al.*, (10). This is an indication that the patient's clinical management must have achieved the objectives of controlling anaemia, pain and infection which reduces the hypercoagulable challenges. The goal of managing sickle cell anaemia is to prevent complications by reducing the incidence of sickle cell crisis (11).

There was no significant difference in the result of Prothrombin Time Test Kaolin (APTT) between the patients and the controls. This finding does not agrees with the work and findings of Chinawa *et al.*, 2013 (12) that found prolonged PT and APTT in steady states as well as in crisis in Enugu, Nigeria. Sickle cell anaemia had earlier been reported to be associated with an increase in prothrombotic factors and a decrease in physiologic anticoagulants, resulting in a predisposition to venous thrombosis (13).

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