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**Prevalence of Asymptomatic Malaria Parasitemia and ABO Blood Group in Almageri Children Of Gwada Town**

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**ABSTRACT**

Malaria is one of the most severe public health problem and a leading cause of morbidity and mortality especially in developing countries. Asymptomatic Malaria is prevalent in malaria endemic regions and has become a serious cause for concern. This study examined the prevalence of asymptomatic malaria parasitemia and ABO blood group among Almageri School children. Venus blood samples from 85 apparently healthy children from three different schools was aseptically collected and screened for malaria parasites and ABO grouping using the thick film Giemsa staining and tile techniques. There is a 14.11% prevalence of asymptomatic malaria parasitemia among the Almageri children and age 1-5 year suffer more with 50% prevalence followed by a 17.39% among the age 11-15 years. 60% of the children were blood group O however, blood group AB showed the highest prevalence of 50%. The infection varied with age and blood group however there is need to give attention to the age group of 1-5 years for prophylactic therapy and the use of insecticides treated nets in the Almageri schools in Gwada town.

**Key Words:** Asymptomatic, Malaria, Almageri children, and ABO blood group.

**INTRODUCTION:**

Asymptomatic malaria parasitemia (AMP) defined as the presence of malaria parasites in peripheral blood in absence of symptoms, has been described to be prevalent in regions highly endemic for malaria. Previous studies conducted in Mozambique and other sub-Saharan African countries showed that a large proportion of individuals living in malaria endemic regions harbor asymptomatic malaria disease (Gudo et al. 2013).

Malaria is one of the most severe public health problem and a leading cause of morbidity and mortality especially in developing countries. In Africa Sahara alone, more than 85% of the population lies in malaria endemic areas. Thirty countries in sub-Sahara Africa account for 90% global malaria deaths while Nigeria, Democratic Republic of Congo (DRC), Ethiopia and Uganda account for nearly 50% of the global malaria deaths. It is the second leading cause of death from infectious disease in Africa, after HIV/AIDS and almost 1 out of 5 deaths of children under five years (WHO, 2011). Asymptomatic Malaria is prevalent in malaria endemic regions and has become a serious cause for concern as effort is increasing towards eliminating the parasite (Laishram et al., 2012). Although global morbidity and mortality have decreased substantially, malaria still kills about 2000 people every day. The most affected being children in sub-sahara Africa (White J.N et al. 2014). Because of the close relationship between parasites and erythrocytes, we can expect that any variation in the latter can change the penetration and establishment of merozoites. Genetic factors play an important role in erythrocyte composition. Miller (1977), Associations between blood groups and some diseases have been reported. Clerke et al. (1960) associated group O with rheumatic carditis. The deficiency in Glucose-6-phosphate dehydrogenase increases red blood cell resistance to Plasmodium falciparum as Knight (1963) and Martin have reported. Allison (1954) and Friedman referred to sickle cell anemia and thalassemia as protective factors against P. falciparum infection. Young (1955) and Ray reaffirmed that erythrocytes with hemoglobin-E were more resistant to Plasmodium vivax infection. Miller et al. found that Gambian blacks (West Africa) were resistant to P. vivax malaria when Duffy group antigens were absent; similar observations were made by authors like Young (1955). In Gwada community of Niger state Nigeria there is little or no data on the prevalence of asymptomatic malaria and blood group among children attending Almajiri schools. This study therefore was to determine the prevalence of symptomatic malaria parasitemia in Almageri Schools Gwada, Niger State.
**Materials and Methods:** The study is non hospital based and included 3 Almageri Schools namely: Anguwan central Almageri School, Anguwan Yurobawa Almageri school and Anguwan Hausawa Almageri School, Gwada Niger State. Only apparently healthy subjects registered in the Almageri School were used. Ethical approval and informed consent were gotten from the district head and the subjects. A total of 85 blood samples were considered for this study, 43 from Anguwan Hausawa Almageri School, 26 from Anguwan Yurobawa Almageri School and 16 from Anguwan Central Almageri School. Subjects are made up children within the age of 1 to 23 years old.

**Sample Collection and Laboratory Analysis:** About 2ml of blood sample was obtained by venipuncture from each of the subjects and screened for symptomatic Malaria Parasitemia and blood grouping. Thick blood film slides were prepared using 10% Giemsa solution (Cheesbrough 1998). From each sample, a drop of well mixed, anticoagulated blood was added to clean grease free dried and well labeled glass slide with the aid of an applicator, and was allowed to air dry. The films were placed one staining trough and stained with 10% Giemsa stain for 10 minutes. After 10 minutes the stain was washed off the slide using distilled water. The back of the slides was wiped off and placed in a draining rack and allowed to air dry. The stained slides were examined under a light microscope using 100 × oil immersions. The positive films were observed and reported.

ABO blood groups were typed by agglutination using commercial antisera (Biotech laboratories Ltd, Ipswich, Suffolk, UK). Two drops of whole blood were placed in two different places of a grease-free clean glass slide on which a few drops of antisera for blood group A and B was applied. The blood cells and the antigen were mixed with applicator stick. The slide was then tilted to detect for agglutination and the result recorded accordingly [Barragan, et al. 2000; Zoysa, 2000].

**Result and Discussion:** While Table 1: presented the result of prevalence of asymptomatic malaria parasitemia, Table 2: showed asymptomatic malaria parasitemia and Blood Group of Almajiri Schools children in Gwada community.

### Table 1: Distribution of asymptomatic Malaria Parasitemia by Age in Almageri School in Gwada

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Anguwan Hausawa</th>
<th>Anguwan Yurobawa</th>
<th>Anguwan Central</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Examined</td>
<td>No. Infected (%)</td>
<td>No. Examined</td>
<td>No. Infected (%)</td>
</tr>
<tr>
<td>1 – 5</td>
<td>7</td>
<td>3 (42.85)</td>
<td>1</td>
<td>1 (100)</td>
</tr>
<tr>
<td>6 – 10</td>
<td>16</td>
<td>1 (6.25)</td>
<td>10</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>11 – 15</td>
<td>10</td>
<td>2 (20.00)</td>
<td>9</td>
<td>1 (11.11)</td>
</tr>
<tr>
<td>16 – 20</td>
<td>9</td>
<td>0 (0.00)</td>
<td>6</td>
<td>2 (33.33)</td>
</tr>
<tr>
<td>21 – 25</td>
<td>1</td>
<td>0 (0.00)</td>
<td>0</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>6 (13.95)</td>
<td>26</td>
<td>4 (15.38)</td>
</tr>
</tbody>
</table>

Analysis of each Almageri School showed that malaria parasitemia is more prevalence in Anguwan Yorubawa (15.38%) Almageri School followed by Anguwan Hausawa (13.95%), and Anguwan Central (12.5%) respectively. The total prevalence in this study was 14.11% which is 12 out of 85 male subjects that participated in the study as shown in table 1. This value is closely similar to the finding of Starzengruber et al. 2014, who reported high prevalence of asymptomatic malaria in south-eastern Bangladesh with a prevalence rate of 14.2% (95% CI: 12.5-16.2), Kimbi, (2005) in a study conducted on Prevalence of asymptomatic malaria among school children in an urban and rural area in the Mount Cameroon region reported a similar finding of 42.17% for the urban area while that of the rural area was 40.16% respectively. However, the result of this study was higher when compared to a similar study.

### Table 2: Distribution of Asymptomatic Malaria Parasitemia and Blood Group in Almajiri Schools Gwada

<table>
<thead>
<tr>
<th>Blood Group</th>
<th>Anguwan Hausawa</th>
<th>Anguwan Yorubawa</th>
<th>Anguwan Central</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Examined</td>
<td>No. Infected (%)</td>
<td>No. Examined</td>
<td>No. Infected (%)</td>
</tr>
<tr>
<td>O</td>
<td>24</td>
<td>4 (16.66)</td>
<td>17</td>
<td>2 (11.26)</td>
</tr>
<tr>
<td>A</td>
<td>12</td>
<td>1 (8.33)</td>
<td>4</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>B</td>
<td>6</td>
<td>1 (16.66)</td>
<td>3</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>AB</td>
<td>1</td>
<td>0 (0.00)</td>
<td>2</td>
<td>2 (100)</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>6 (13.95)</td>
<td>26</td>
<td>4 (15.38)</td>
</tr>
</tbody>
</table>
conducted in Tanzania (Nzobo 2015) where the prevalence rate among school children was 5.4 % (95% CI 3.3–8.6 %) respectively. While we observed highest prevalence among group 1-5 years, School children aged 6–9 years were more affected in the study by Nzobo et al. (2015). This may suggest that children of age less than 10 are more vulnerable due to factors such as ignorance and poverty. In Table 2, we also observed in this study that the dominant blood group among Gwada community was the group O51 (60.0 %), A 19 (22.4%), B 11(12.9%) and AB 4 (4.7%) respectively.

This observation is in line with several work done that suggested that high prevalence of group O coupled with a low prevalence of group A is found throughout sub-Saharan (Christine and Walter, 2007). In contrast, group A is the predominant blood group in the colder regions of the Earth, where malaria has not been endemic. In fact, group A is found in highest frequency in Scandinavia, Greenland, and the subarctic regions of Europe and North America. Thus, if survival from malaria is associated with group O, and mortality is associated with group A, then the worldwide distribution of ABO groups is consistent with selective pressure from malaria (Christine and Walter, 2007).

In this study we observed that blood group AB has the highest prevalence of malaria parasitamia of 50%, followed by blood group O (13.73%), A (10.53) and B (9.10%) respectively. This is in line with several works. Tekeste and Petros (2010) reported that individuals with severe malaria were about six fold less likely to be of O as to be of type AB. In a similar study in Zimbabwe, it was reported that severe malaria was relatively more frequent in individuals in the non-O blood groups (Philip and Paul 1998). In 1998, Fischer et al reported favorable outcomes for group O individuals compared with group A among 489 patients in Zimbabwe.

The adherence of parasitized RBCs to other cells is central to the pathophysiology of severe malaria syndromes. The virulence of Plasmodium falciparum is associated with the capacity of the infected red blood cell (RBC) to adhere to uninfected RBCs, a process known as rosetting, which has been linked to the occurrence of severe malaria. A hypothetical model is shown in figure 1.

Figure 1. Hypothetical model for cytoadhesion of parasitized RBCs to blood group A or group B structures. Copyright Kimberly Main Knopper; used with permission.

Figure 1 Shows a hypothetical model of explain binding of parasitized RBCs to group A or B Antigens. Three lines of evidence suggest a direct role for group A or B antigens in Cytoadherence as measured by Rosette Formation: (1) Higher Rosette rates and larger Rosette sizes among non-group O compared with group O RBCs; (2) Rosette disruption by Soluble Group A or Group B Oligosaccharides; And (3) Correlation of Rosette formation with transcription of the lectin-Specific binding domain of Pfemp-1. ABO effects on the frequency, size, and strength of Rosette formation in vitro were first reported by Carlson et al in 1992. when RBCs from 52
donors of different ABO groups were incubated with O RBCs infected with P falciparum strain R_PA1, found resetting was greatest with group A/AB.

CONCLUSION
This study revealed that there was a large proportion of asymptomatic malarial infections was found in children attending almajiri schools in Gwada community especially among the AB blood group. This will likely act as a reservoir of transmission. This has major implications for ongoing malaria control programs that are based on the treatment of symptomatic patients. These findings highlight the need for new intervention strategies targeting asymptomatic carriers of malaria plasmodiassis.

ACKNOWLEDGMENT
We are grateful to the district head of Gwada and all the staff and students of Anguwan Hausawa Anguwan Yorubawa and Anguwan Central Almajeri schools for permission and cooperation during the work. We are also grateful to the staff of Elite International Health Academy Zaria for support and assistant.

REFERENCES

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Prevalence of Tongue-Tie among the People of Niger State in North Central Nigeria

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ABSTRACT

Introduction: Tongue-tie or ankyloglossia is a congenital anomaly in which the lingual frenulum is thick, short or tight. Tongue-tie can affect the way a child eats, speaks and swallows, as well as interfere with breast-feeding. This study was aimed at determining the prevalence of tongue-tie among the people of Niger State in North Central Nigeria.

Materials and Methods: This is a retrospective survey of patients from Nupe and Hausa ethnic groups who attended the Central Hospital, Suleja in 2015. The cluster sampling technique was used to select 496 people from Niger State aged below 10 years. Data was acquired by the use of the medical records of the subjects. Data analysis was undertaken with the aid of Statistical Package for the Social Sciences (SPSS) version 20. Chi square was used to find out if there was any significant gender difference in the prevalence of tongue-tie. Statistical significance was noted at p<0.05.

Results: It was noted that 29 (5.8%) of the participants had tongue-tie. There was a significant gender difference in the prevalence of tongue-tie (p = 0.028).

Conclusion: Tongue-tie is uncommon among the people of Niger State.

Keywords: Tongue-tie, uncommon, people, Niger State.

INTRODUCTION

Tongue-tie or ankyloglossia is a congenital oral anomaly in which the lingual frenulum is thick, short or tight. The condition may be asymptomatic, or present with complications like breast-feeding difficulties or speech, dental and cosmetic problems [1]. A prevalence study was done on children attending regular and special schools in Karnataka, India [2]. Another prevalence study on ankyloglossia and tongue mobility was carried out in Iran [3]. An interesting study on tongue-tie was done with the babies of the Special Care Baby Unit in the University of Port Harcourt Teaching Hospital [1]. The occurrence of tongue-tie in children in Benin City was investigated few years ago [4].

Literature search did not reveal data on the prevalence of tongue-tie among the people of Niger State in North Central Nigeria and yet anecdotal reports tend to suggest it may be a common clinical entity that is poorly understood in this population. This study was therefore aimed at determining the prevalence of tongue-tie among the people of Niger State. The author believes that this study has the potential that will provide useful information in the field of Maxillofacial Surgery in Nigeria.

MATERIALS AND METHODS

The retrospective survey method was used in this study of patients from Nupe and Hausa ethnic groups who attended the Central Hospital, Suleja in 2015. The cluster sampling technique was used to select persons aged below 10 years. Data was obtained by the use of the medical records of the subjects. Those above 10 years and non indigenes of Niger State were excluded from the study. Prior to this study, approval was obtained from the Chief Medical Director of the Central Hospital in Suleja. Data analysis was done with the aid of Statistical Package for the Social Sciences (SPSS) 20.0 for Windows. Chi square was used to find out if there was any significant gender difference in the prevalence of tongue-tie. Statistical significance was inferred at p<0.05.

RESULTS

Table 1: Frequency distribution of gender of participants

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency (N)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>204</td>
<td>41.1</td>
</tr>
<tr>
<td>Female</td>
<td>292</td>
<td>58.9</td>
</tr>
<tr>
<td>Total</td>
<td>496</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1: Revealed that both gender were represented in the sample though the female gender is dominant.
Table 2: The prevalence of tongue-tie among the people of Niger State

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency (N)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>18</td>
<td>3.6</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>2.2</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Table 2 revealed that tongue-tie is more common or commoner in male than in female indigenes of Niger State.

Table 3: The statistical analysis of the association between tongue-tie and gender using chi - square

<table>
<thead>
<tr>
<th>Chi-square</th>
<th>df</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.832a</td>
<td>1</td>
<td>0.028</td>
</tr>
</tbody>
</table>

Pearson chi-square test revealed the presence of a significant gender difference in the prevalence of tongue tie (p= 0.028).

**DISCUSSION**

It was observed that 29 (5.8%) of the participants had tongue-tie. This finding was in keeping with figures from previous studies by prominent Researchers on the prevalence of ankyloglossia, with reported values of between 4 and 13 % [8-11]. Some Otorhinolaryngologists saw fifty newborns with ankyloglossia, for an incidence of 4.8%. They noted that the male-female ratio was 2.6:1.0 [8]. Some Pediatricians diagnosed tongue-tie in 88 (3.2%) of the inpatients and in 35 (12.8%) of the outpatients in a health facility in U.S.A [9].

The finding that tongue-tie was more common in males with a significant gender difference in the prevalence of tongue-tie (p= 0.028), is consistent with the findings that were noted by different Researchers over the past two decades [3,12-13]. Some collaborating Researchers did not report significant gender difference in the prevalence of tongue-tie [14].

The differences in the prevalence of tongue-tie in the studies stated above may be attributed to the different age groups under study and different etiological factors causing tongue-tie.

**CONCLUSION**

Tongue-tie is relatively uncommon among the people of Niger State.

**REFERENCES**


ABSTRACT

Alterations in fibrinogen levels of patients with chronic liver disease (CLD) in Maiduguri was studied. However, the dimension of this observation in Maiduguri has not been formerly established. Fifty clinically diagnosed and laboratory confirmed CLD patients attending the UMTH had their plasma fibrinogen concentration (PFC) estimated by automation. Apparently, fifty healthy individuals who are HIV, HBsAg and HCV negative were included as a control and undergo the same test. Among the CLD patients, 20-29 years’ age group have a mean PFC of 1.42 ± 0.05g/l while the age group 60 years’ and above have a PFC of 4.9 ± 0.09g/l. This means that the older age group tend to have a higher PFC values. The control group follows the same pattern. Overall, the CLD patients have a mean PFC of 2.86 ± 0.92g/l as compared to the control group with 2.74 ± 0.88g/l. Furthermore, most of the CLD patients belongs to the older age group. The difference between the mean PFC of the CLD patients and the control was not statistically significant (p > 0.05). These findings may be a positive scorecard for CLD patients seen in UMTH.

Keyword; Plasma Fibrinogen Concentration (PFC), Chronic Liver Disease (CLD)

INTRODUCTION

Chronic liver disease has been defined as a disease of the liver which has persisted for many years without progressive improvement toward normalcy. In Nigeria and in fact in Africa in general chronic liver disease commonly encountered include chronic hepatitis associated with hepatitis B virus (HBV), alcohol-related liver disease, hepatoma and parasitic liver disease due to amoeba and schistosomes infections. Many studies, however, have demonstrated HBV infection epidemiologically the most common cause. Cirrhosis is the end result of many inflammatory and metabolic diseases involving the liver. It results in a diffused fibrosis which destroys the liver lobules and regenerating nodules of hepatocyte distorts hepatic architecture and disrupts hepatic blood supply and hence synthetic and detoxification capacity of the liver. The role of the liver in the synthesis of various proteins involved in coagulation and fibrinolysis has been generally demonstrated. Fibrinogen, a glycoprotein synthesized at the level of the hepatic microsome has a molecular weight of 340000 daltons and adult plasma level of 2 to 4g/l. Of all the coagulation proteins, fibrinogen is the most consistently associated with cardiovascular event. This association results from two basic mechanisms. As an acute phase, reactant fibrinogen contributes independently to blood viscosity resulting in negative haemorheology. As a substrate for thrombin, it is involved in fibrin clot formation and hence thrombus. Because of the relationship between liver and the coagulation proteins, the use of the PFC as indices of diagnostic and prognostic markers in both acute and chronic liver disease are well established. No previous report has documented on plasma fibrinogen concentration (PFC) in CLD patients in Maiduguri, North East of Nigeria. This study, therefore, aims at establishing plasma fibrinogen concentration as a possible marker for diagnosis and prognosis in CLDs in Maiduguri.

MATERIAL AND METHOD

Fifty clinically diagnosed and laboratory confirmed CLD patients referred to the department of Haematology, University of Maiduguri Teaching Hospital were studied prospectively over a period of 13 months (October 2013 to November 2014). Apparently, healthy, age and sex matched individuals serologically negative for HIV 1 & 2, HBsAg and HCV subjects were recruited as controls (mainly blood donors and staff volunteers). The CLDs comprises of 35 males and 15 females ages between 20 to 74years. Blood samples were collected by venepuncture at the antecubital space of the forearm, following informed consent and pre-
Fibrinogen Levels in Chronic Liver Disease...

test counselling. 1.8mls of blood was drawn into a bottle containing 0.2mls of trisodium citrate (3.2%). After immediate centrifugation at 2500g for 5minutes platelet, poor plasma was separated and plasma fibrinogen concentration estimated [10]. Estimation was carried out by automation using Sysmex CA-560 Series Coagulometer and Dade Behring (Germany) thrombin reagent of (100NIH Unit) following manufacturer’s instruction. Data obtained were analysed and summarized as a mean ± standard deviation. Result for CLDs and control subjects were compared with student t-test using Microcal origin (version 5.0) statistical software.

RESULT

Age characteristics of male and female subjects in control and CLD groups are summarized in table I. The age span of the two groups was 20 to 74 years. Table II shows that 56% of the CLD patients are in the age group greater than 60 years. Thirty-five (70%) of the CLD patients are male as compared to 15 (30%) female. Data from table II suggest that among the CLD patients, the older age group (>60years) tend to have the highest PFC level (4.9 ± 0.09g/l) while the CLD patients of the age category (20-29years) have a mean PFC 1.42 ± 0.05g/l. That means the CLD patients of older age group have a higher PFC value than the younger age group. The control group follows the same pattern. Table III shows a statistical comparison of the mean PFC of the CLD patients with that of the control subjects and the p-value is greater than 0.05. This suggests that there is no statistically significant difference in PFC between the CLD patients and the control subjects.

DISCUSSION

The liver is the primary site of synthesis of most coagulation proteins including fibrinogen. The role of fibrinogen in haemostasis is dual, as a substrate for thrombin, fibrinogen is converted into fibrin clots and as an acute phase reactant it contributes to blood viscosity resulting in a negative effect on haemorheology [7,8]. These roles have in the recent time brought fibrinogen to research

<table>
<thead>
<tr>
<th>Age range (years)</th>
<th>CLD (n=50)</th>
<th>Control (n=50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 – 29</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>30 - 39</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>40 - 49</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>50 - 59</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>≥60</td>
<td>58</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

Table II

Age distribution of CLD patients with PFC (g/l)

<table>
<thead>
<tr>
<th>Age range (years)</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>%</th>
<th>PFC (mean ± SD) g/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 – 29</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>1.42 ± 0.05</td>
</tr>
<tr>
<td>30 - 39</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>2.38 ± 0.07</td>
</tr>
<tr>
<td>40 - 49</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>10</td>
<td>3.37 ± 0.78</td>
</tr>
<tr>
<td>50 - 59</td>
<td>9</td>
<td>2</td>
<td>11</td>
<td>22</td>
<td>4.42 ± 0.16</td>
</tr>
<tr>
<td>≥60</td>
<td>18</td>
<td>10</td>
<td>28</td>
<td>56</td>
<td>4.90 ± 0.09</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>15</td>
<td>50</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table III

Mean fibrinogen concentration (g/l) of CLD patients and control subjects

<table>
<thead>
<tr>
<th></th>
<th>Control (n=50)</th>
<th>CLD (n=50)</th>
<th>t-cal</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFC (g/l)</td>
<td>2.74 ± 0.88</td>
<td>2.86 ± 0.92</td>
<td>0.393</td>
<td>p &gt; 0.05</td>
</tr>
</tbody>
</table>
limelight. Of all the haemostatic markers it is the most consistently associated with the occlusive vascular disorder. Its plasma elevation may lead to hypercoagulable state \[^{15}\]. While its deficiency is associated with haemorrhagic events such as gastrointestinal (GIT) bleeding in chronic liver disease (CLD) patients \[^{11, 12, and 15}\]. Van De Water et al \[^{14}\] was of the opinion that elevated fibrinogen levels observed in the plasma of some CLD patients represent compensation by decreased disposal rate and acute phase response; this may also explain the normal fibrinogen level recorded in our study.

The need to in cooperate plasma fibrinogen concentration (PFC) into the prognostic markers of CLD is supported in the literature\[^{16, 17}\] . These authors argued that standard coagulation test such as prothrombin time (PT) and activated partial thromboplastin time (APPT) may not reflect the true coagulation status of CLD patients. PT and APPT are only responsive to procoagulant factors and are prolonged in advanced liver disease. In addition, they measure the formation of fibrin from thrombin without reflecting the activities of fibrinolytic factors\[^{18}\] . Plasma fibrinogen apart from contributing to fibrin formation can also be considered as a marker of increased fibrinolytic activity \[^{19}\] . Castelino and Salem \[^{20}\] inferred that PT and APPT do not take into account the activation of the primary endogenous anticoagulant protein C level, the reduction of which may compensate downregulated procoagulant factors in CLD. Estimation of PFC will permit us to follow the dynamics of CLD and may also be helpful as an important diagnostic index of haemorrhagic tendencies in the course of the disease.

In our study, the majority of the CLD patients were the elderly 39 (78%) who are in the age range of (50 to 65 years). Only 2 (4%) had GIT bleeding. Further investigation revealed that they had underlying thrombocytopenia. Statistical comparison between PFC of the CLD patients and the control subjects showed no statistical differences (p > 0.05). These differ from previous studies \[^{21, 19, 20, 21}\] . However, our findings are in agreement with that of Lismam et al, \[^{22}\] and Martinez et al, \[^{22}\] . The PFC 4.9 ± 0.09gl\(^{-1}\) estimated for the elderly in our study may be explained by the inference of Azihong and Sreekumara \[^{23}\] who while studying the effect of aging on fibrinogen level in man asserted that such elevated levels may represent a slower rate of disposal due to aging rather than an increased synthesis. A similar study previously by Ward and Richardson \[^{24}\] is also in agreement. Dietary compositions such as lipid and fish oil have been demonstrated to influence PFC positively \[^{22}\] . Maiduguri the largest settlement south of Lake Chad provides one of the largest fish markets in Nigeria. The relative abundant and consumption of fish in Maiduguri and environ may be contributing to stable PFC recorded in this study. Additionally, it is also known that environmental and genetic factors determine fibrinogen level. Many studies have associated fibrinogen \(^{-}\) gene polymorphism (-455G/A, 148C/T, and BCLL) with PFC. Fibrinogen\(^{\beta}\)-gene promoter polymorphism is associated with the response of fibrinogen level to environmental factors such as physical exercise, rest and season \[^{25, 26}\] . These assertions with respect to our environments require verification through further research. Fish which is relatively abundant and consumed freely in Maiduguri and environ may also contribute to stable PFC recorded in this study. These assertions require verification through further research.

Whereas PT and APTT may not adequately reflect the haemostatic status of CLDs, excluding them or introducing PFC as a routine prognostic marker in CLD may not be practicable now in poor resource setting like ours. In addition, the preferential patronage of alternative health care by the majority of our people may reduce the chances of recruiting a substantial number of CLDs in good time via orthodox health care system for properly control randomized studies.

In conclusion, we state that relatively normal plasma fibrinogen concentration and concomitant stable blood rheology may be a positive scorecard and a probable protective mechanism against eventual bleeding in chronic liver disease patient seen in Maiduguri North-east of Nigeria.

**REFERENCES**


11. Lecloire, Sifioref, Merlev, Herve S., Duhamel L., Obi, S. O.


Prevalence of Dental Erosion in a Group of Urhobo Adults in Delta State

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ABSTRACT

Introduction: Dental erosion may lead to clinical oral problems such as dentine sensitivity. This study was aimed at determining the prevalence of dental erosion in a group of Urhobo adults in Delta State.

Materials and Methods: The cluster sampling technique was utilized to select 384 Urhobo adults within the ages of 20-30 years in this cross sectional survey. Data was acquired by the use of a self-administered questionnaire and intra-oral examination of the subjects. Data analysis was achieved with the aid of Statistical Package for the Social Sciences (SPSS). Chi square was used to find out if there was any significant association between gender and the occurrence of dental erosion. Statistical significance was inferred at p<0.05.

Results: It was noted that 57 (14.8%) of the participants had dental erosion. There was a significant association between gender and the occurrence of dental erosion (p=0.008).

Conclusion: There is a low prevalence of dental erosion among Urhobo adults.

Key words: Dental erosion, Urhobo, adults, gender.

INTRODUCTION

Dental erosion may lead to clinical oral problems such as dentine sensitivity. Dental erosion is the loss of dental hard tissue by means of a chemical process [1]. It occurs secondary to acidic attacks from simultaneous unsaturation of both hydroxyapatite and fluor-apatite in saliva and eventually there is loss of dental hard tissue, layer by layer [2].

A study was carried out to establish the prevalence of erosion in a cluster random sample in Birmingham, UK [3]. An interesting article was written in which scholars defined, classified and did a clinical assessment of attrition, erosion and abrasion of enamel and dentine in London [4]. Some people looked critically at the pathological or physiological aspects of erosion and the relationship to age [5]. An article featured authors who discussed dental erosion, did a classification and considered the links involved [6].

A study was done to establish the prevalence and severity of tooth wear among Nigerians and to compare the pattern and aetiology with findings of earlier studies in Western populations [7]. Another Nigerian study considered the prevalence of dental erosion in Nigerian patients with gastro-oesophageal reflux disease [8].

There is dearth of data on the prevalence of dental erosion among the Urhobos in Delta State. This study will provide information that will be useful in dentistry. This study was aimed at determining the prevalence of dental erosion in a group of Urhobo adults in Delta State.

MATERIALS AND METHODS

The study area is the Delta State University situated in Abraka. The study subjects are 384 Urhobo adults within the ages of 20-30. Approval for this study was sought from the Research and Ethics Committee of Anatomy Department in the Delta State University, Abraka. Consent was obtained from each participant as well.

The cluster sampling technique was used to select the study subjects in this cross sectional survey. Data was acquired by the use of a self-administered questionnaire and intra-oral examination of the subjects. The gloved hands, wooden spatulas and dental probes were used to eliminate food debris on the surfaces of the teeth under natural light. The teeth of participants were dried using cotton wool balls before examination to enhance visibility. Dental mirrors were also used during the process of examination to also enhance visibility. The teeth of participants were dried using cotton wool balls before examination to enhance visibility. Dental mirrors were also used during the process of examination to also enhance visibility. The teeth of participants were observed for erosion which gave the appearance of smooth silky-glazed, sometimes dull, enamel surface. The labial, buccal, palatal and lingual surfaces of the teeth were examined.

Data analysis was achieved with the aid of Statistical Package for the Social Sciences (SPSS). Chi square was
used to find out if there was any significant association between gender and the occurrence of dental erosion. Statistical significance was inferred at p<0.05.

RESULTS

Table 1:
Frequency distribution of gender of participants

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency (N)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>181</td>
<td>47.1</td>
</tr>
<tr>
<td>Female</td>
<td>203</td>
<td>52.9</td>
</tr>
<tr>
<td>Total</td>
<td>384</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 1 revealed that both gender were well represented in the sample, though the females were more in number.

Table 2:
The prevalence of dental erosion among the Urhobos

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency (N)</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>25</td>
<td>6.5</td>
</tr>
<tr>
<td>Female</td>
<td>32</td>
<td>8.3</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>14.8</td>
</tr>
</tbody>
</table>

Table 2 revealed that few participants were affected by dental erosion. The Urhobo males were relatively more susceptible to dental erosion.

Table 3:
Pearson chi-square test for the association between gender and prevalence of dental erosion among the Urhobos

<table>
<thead>
<tr>
<th>Chi - square value</th>
<th>P- value</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.665</td>
<td>0.008</td>
</tr>
</tbody>
</table>

Table 3 revealed that the association between gender and prevalence of dental erosion among the Urhobos was significant.

DISCUSSION

The results of this study showed that 14.8% of the Urhobos had dental erosion. This study revealed findings similar to those of Researchers in Germany who noted that the prevalence of dental erosion was 13% [9]. Three prominent Researchers in Sweden also saw that the prevalence of dental erosion was 13% [10].

A study done in United Kingdom by collaboration revealed the prevalence of dental erosion as 30% [11]. Two decades ago it was also observed that the prevalence dental erosion was 30% in United Kingdom [12]. Two erudite scholars in Asia were not left out as they also noted a prevalence of 30% in India [13].

This study did not agree with a study on the prevalence of dental erosion in Birmingham, UK, which revealed that 48% of the participants had dental erosion [3]. Others saw a prevalence of 53% in the United Kingdom [14]. The present study differed from a Nigerian study with the prevalence of dental erosion as 7.1% [7]. Some Researchers saw a prevalence of 6% in Iceland [15] and seven years later others also saw a prevalence of 6% in Iceland [16].

The differences in the prevalence of dental erosion in the studies discussed above may be attributed to the different age groups under study and different aetiological factors causing dental erosion.

CONCLUSION

There is a low prevalence of dental erosion among Urhobo adults.

REFERENCES


factors in 2-7 year-old German kindergarten children. Oral Diseases. 12(2) 117-124.


INTRODUCTION:

Malaria parasitaemia is the most important and widespread of parasitic diseases in tropical (developing) countries, and presents enormous problems in Africa. According to statistics, Malaria is the only disease today apart from Acquired immune deficiency syndrome (AIDS) that shows a significant rising profile, causing over 300,000 deaths among children aged less than 5 years.

Malaria is non-seasonal or holoendemic in Nigeria with Plasmodium falciparum as the dominant strain. It is the most common cause of out-patients' visits to health facilities and the most serious form of the disease. Malaria parasitaemias the presence of malaria parasites in the blood. They may also be found in other tissue fluids such as lymph and cerebrospinal fluid (CSF). Malaria parasites are protozoan parasites belonging to the class sporozoa and genus Plasmodium. There are four species of parasites which produce malaria in man; Plasmodium vivax produces benign tertian malaria, Plasmodium malariae of quartian malaria, Plasmodium ovale of tertian malaria and Plasmodium falciparum which causes malignant tertian malaria or falciparum malaria. They are transmitted through the bite of an insect vector, female anopheles mosquito. They can also be transmitted by transfusion of infected donor blood or by injection through the use of needle and syringes contaminated with infected blood.

In high malaria endemic areas, for example Nigeria, people are infected and re-infected so frequently that they develop a degree of acquired immunity. These subjects may become asymptomatic or mildly symptomatic carriers. This population develops and maintains a high degree of immune response, which at the same time, there is a nearly permanent presence of very small numbers of parasites in many of them, mostly adults. Resistance can be built up in previously infected host in the presence of asymptomatic parasitaemia. The prevalence of malaria and other blood parasites among adult subjects often reflect age-related resistance rather than the transmission rate in the community; there is therefore the tendency for a higher rate of asymptomatic parasitaemia among adults than in children living in endemic area. In the descriptive pattern of malaria parasitaemia studied in pregnant women, there was a statistically significant difference in parasite prevalence rate in relation to gestation and parity. The prevalence rate is higher in rainy season than in dry season; however, there was no significant association between ABO blood group and malaria parasitaemia, or antibody titre.

Besides haemo-viral diseases screened, certain haemoparasitic diseases such as malaria parasitaemia may remain hidden in blood donors and must be excluded so as to prevent transmission to recipient. In those areas of high malaria endemicity, malaria survey tends to underestimate the prevalence of malaria because of low grade parasitaemia among asymptomatic carriers. Such carriers...
are an important risk in blood transfusions, and unscreened donor blood has accounted for several cases of imported and post transfusion fevers (transfusion reaction) in many countries. A number of counter measures have been suggested including the storage of blood and post transfusion antimalarial therapy, in order to minimize transmission of malaria to blood recipients. In spite of these measures, there remains a persistent risk of passive transmission of malaria and other blood parasites in many tropical countries either because of inadequate storage of blood or ineffective chemotherapy.

This study was carried out to investigate the prevalence of malaria parasitaemia, its distribution and density in blood donors in Jos.

**MATERIALS AND METHODS**

**Study Area:** The study was carried out in Jos University Teaching Hospital (JUTH), located at Lamingo area of Jos East Local Government council, about 8km from the centre of Jos city, the capital of Plateau State, Nigeria.

**Sample Collection:** Whole blood samples were collected from 330 blood donors attending Blood Bank JUTH, from the month of February to the month of July. Questionnaire on age, sex, antimalarial medication, use of bed nets and window nets, residential locations within the period of study and history of previous malaria infection and donation of blood among others were also gathered. Subjects who were on weekly antimalarial preventive therapy were treated as control group.

**Data from Questionnaire:**
All the subjects were from Jos metropolis, villages and towns in Plateau State. The age of these subjects ranged from 18 years to 55 years. 324 (98.2%) of them were males while 6 (1.8%) was females. 20 (6%) was on weekly antimalarial preventive therapy (considered as control subjects) while the rest were not on any medications. 76 (23%) of the subjects (mostly family replacement) had malaria infection therapy 2-3 months before donating blood. 220 subjects had window nets in their houses, and none sleep inside bed nets. 83 (25%) were regular voluntary donors that come within the space of 4 to 6 months intervals per year.

**Sample Processing:** Thick and thin blood films were prepared from each sample on two separate microscopic slides. The thick film was stained with Giemsa staining method which yields a much higher concentration of the parasites when they are few in number, while the thin film was stained with Leishman's staining method which permits the study of the morphology and density of the parasites and the condition of the blood corpuscles as well.

**Examination of Films:** Both thick and thin blood films stained in Giemsa and Leishman's stains were examined using immersion oil with X100 objective of the microscope. Malaria parasites were seen as follows: chromatin dots of the parasites stained dark red, and cytoplasm stained blue. No schuffner's dots or maurer's dots were seen.

**Estimation of Malaria Parasite Density:** The technique was by average percentage count of parasitized/infected red blood cells in a thin film stained with Leishman's stain against the total red blood cells counted.

\[
\text{Parasite Count} = \left( \frac{\sum Y}{X} \right) \times 100\%
\]

Key:

- \( Y \) = Number of infected red blood cells per field
- \( X \) = Number of red blood cells per field
- \( ? \) = Total sum

**Statistical Analysis:** Data was subjected to statistical analysis using SPSS version 17. Data values were reported as One Way Analysis of Variance (ANOVA) was used to test for the individual effect of treatment groups while students T-test was used to test for significant differences between the diet types, using Statistical Package for Social Sciences.

---

**Table 1: Prevalence of malaria parasitaemia, density in relation to sex**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Total Number Examined (%)</th>
<th>Infection Rate (%)</th>
<th>O.D</th>
<th>Mean Parasite Density (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Parasites/(\mu)l)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>324(98.2)</td>
<td>14(4.3)</td>
<td>0.09</td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>6(1.8)</td>
<td>2(33.3)</td>
<td>1.00</td>
<td>0.03(2000)</td>
</tr>
<tr>
<td>Control</td>
<td>20</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>P-value</td>
<td>0.020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(X^2)</td>
<td>5.379</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>330(100)</td>
<td>16(4.8)</td>
<td>0.05</td>
<td>(3000)</td>
</tr>
</tbody>
</table>

O.D = Odd ratio (risk)
Sciences (SPSS) version 17.

RESULTS:
The prevalence rate of malaria parasitaemia among 330 blood donors was 4.8% as against control group (who was on weekly antimalarial preventive therapy) who had no malaria parasitaemia. The results of this study are represented in the tables 1 and 2 below.

DISCUSSION:
The prevalence of malaria parasitaemia among blood donors in Jos University Teaching Hospital was 4.8% (16)

Table 2: Prevalence of malaria parasitaemia, density in relation to age

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>Total Number Examined (%)</th>
<th>Infection Rate (%)</th>
<th>O.D</th>
<th>Mean Parasite Density (%) (Parasites / µl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 – 30</td>
<td>80 (24.2)</td>
<td>5 (6.3)</td>
<td>1.93</td>
<td>0.06 (3000)</td>
</tr>
<tr>
<td>31 – 40</td>
<td>160 (48.5)</td>
<td>8 (5.0)</td>
<td>1.53</td>
<td>0.06 (3000)</td>
</tr>
<tr>
<td>41 – 50</td>
<td>90 (27.3)</td>
<td>3 (3.3)</td>
<td>1.00</td>
<td>0.03 (1500)</td>
</tr>
<tr>
<td>51 – 55</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
<td></td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Control</td>
<td>20</td>
<td>0.00</td>
<td></td>
<td>0.00</td>
</tr>
<tr>
<td>P-value</td>
<td>0.375</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Χ²</td>
<td>0.786</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>330 (100)</td>
<td>16 (4.8)</td>
<td>0.15</td>
<td>0.15 (7500)</td>
</tr>
</tbody>
</table>

FIG1: Bar chart showing infection rate (%) of malaria parasitaemia with age
The Prevalence of Malaria Parasitaemia...

while the control group (made up of the subjects on weekly antimalarial preventive therapy) did not have malaria parasite. This level of infection could be attributed to lack of, or partial preventive measures taken by the donors as the case may be. The reason for the present finding of low parasite rate among donors could also be as a result of preventive measures taken by some of the donors such as the use of window nets, insecticides and malaria prophylaxis, as there was no malaria parasites found in donors who took adequate precautions on malaria prevention especially those on antimalarial therapy. Since most of the donors were from Jos metropolis and towns around Jos, they also have access to pharmaceutical and patent medicine shops for self-medication.

The age group between 18 and 30 years were observed to have the highest prevalence rate as against the other age groups. This finding is similar to the work of some other authors. Akinboye and Ogunrinade recorded a higher prevalence among blood donors between the ages of 18 and 30 years. The low turnout of females (1.8%) could infer that there is still the need for more emphasis to be made on female blood donors awareness and advocacy. The decline in malaria prevalence as age increased could indicate improved host immunity which reduce susceptibility in later years, and as well awareness creation in malaria preventive/ control measures and advocacy.

CONCLUSION:
The low prevalence of malaria parasitaemia among blood donors in this study is an indication that more efforts/measures are still needed to be put in place in the on-going control programme and fight against the transmission of malaria infection in order to achieve its eradication. Although transfusion of blood from donor to recipient is a lifesaving process, it could be dangerous if the blood is not screened for malaria parasites and other haemoparasitic diseases before transfusing.

REFERENCES:
Haematological Parameters in Pregnant Women Attending Madonna University Teaching Hospital (MUTH) Elele

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ABSTRACT

This study was carried out to determine the haematological parameters in different trimesters of pregnancy. A total number of 60 subjects comprising 15 subjects each in different trimesters and 15 from non-pregnant women were used for this research. Packed cell volume (PCV), haemoglobin concentration (Hb) and erythrocyte sedimentation rate (ESR) were performed using microhaematocrit, Cyanmethaemoglobin and Westergren methods respectively. Platelet count and total white blood cell count (TWBC) were performed by diluting with 1% Ammonium oxalate and Turk's solution respectively and counted afterwards using improved Neubauer counting chamber. There was a significant decrease (p<0.05) in the PCV of the first trimester pregnant women (32.60±2.44%) and second trimester pregnant women (32.66±1.91%) when compared to the non-pregnant women (35.0±3.22%). There was also a significant (p<0.05) decrease in haemoglobin concentration while total white blood cell count (TWBC) showed significant increase. There was a significant decrease (p<0.05) in platelet count in first (248.4±49.26 x 10^9/L), second (212.8±59.35 x 10^9/L) and third (177.8±59.57 x 10^9/L) trimesters when compared to non-pregnant women (279.13±96.09 x 10^9/L). It can be concluded that normal pregnancy in women alters significantly haematological parameters such as PCV, Hb, ESR and platelet counts. Proper dieting and vitamin supplementation is advised.

INTRODUCTION

Pregnancy also known as gravidity or gestation, is the time during which one or more offspring develops inside a woman. A multiple pregnancy involves more than one offspring such as with twins. Pregnancy can occur by sexual intercourse or assisted reproductive technology. It usually lasts around 40 weeks from the last menstrual period (LMP) and ends in childbirth (Abman and Steven, 2011). When measured from conception it is about 38 weeks. An embryo is the developing offspring during the first 8 weeks following conception, after which, the term foetus is used until birth (Abman and Steven, 2011). Symptoms of early pregnancy may include a missed periods, tender breasts, nausea and vomiting, hunger, and frequent urination. Pregnancy may be confirmed with a pregnancy test.

Pregnancy is typically divided into three trimesters. The first trimester is from week one through twelve and includes conception. Conception is followed by the fertilized egg traveling down the fallopian tube and attaching to the inside of the uterus, where it begins to form the foetus and placenta. The first trimester carries the highest risk of miscarriage (natural death of embryo or foetus) (Haider and Bhutta, 2012). The second trimester is from week 13 through 28. Around the middle of the second trimester, movement of the foetus may be felt. The third trimester is from 29 weeks through 40 weeks. Prenatal care improves pregnancy outcomes. This may include taking extra folic acid, avoiding drugs and alcohol, regular exercise, blood tests, and regular physical examinations. Complications of pregnancy may include high blood pressure of pregnancy, gestational diabetes, iron-deficiency anemia, and severe nausea and vomiting among others. Term pregnancy is 37 weeks to 41 weeks, with early term being 37 and 38 weeks, full term 39 and 40 weeks, and late term 41 weeks. After 41 weeks, it is known as post term. Babies born before 37 weeks are preterm and are at higher risk of health problems such as cerebral palsy. It is recommended that delivery not be artificially started with either labor induction or cesarean section before 38 weeks unless required for other medical reason (Gatti et
Haematological Parameters in Pregnant...

The symptom and discomforts of pregnancy are those presentations and conditions that result from pregnancy but do not significantly interfere with activities of daily living.

Different trimesters (First, second and third)
Minute ventilation is increased by 40% in the first trimester (Campbell and Klocke, 2001). The womb will grow to the size of a lemon by eight weeks. Many symptoms and discomforts of pregnancy like nausea and tender breasts appear in the first trimester.

By the end of the second trimester, the expanding uterus has created a visible “baby bump”. Although the breasts have been developing internally since the beginning of the pregnancy, most of the visible changes appear after this point. Week 13 to 28 of the pregnancy are called the second trimester. Most women feel more energized in this period, and begin to put on weight as the symptoms of morning sickness subside and eventually fade away. The uterus, the muscular organ that holds the developing foetus, can expand up to 20 times its normal size during pregnancy.

In the third trimester, the uterus expands making up a larger and larger portion of the woman’s abdomen. During the final stages of gestation before childbirth the foetus and uterus will drop to a lower position. Head engagement, where the fetal head descends into cephalic presentation, relieves pressure on the upper abdomen with renewed ease in breathing. It also severely reduces bladder capacity, and increases pressure on the pelvic floor and the rectum.

It is also during the third trimester that maternal activity and sleep positions may affect foetus development due to restricted blood flow. For instance, the enlarged uterus may impede blood flow by compressing the lower pressured vena cava, with the left lateral positions appearing to provide better oxygenation to the infant (Stacey et al., 2011). This study was therefore designed to compare some haematological parameters in pregnant women attending Madonna University Teaching Hospital (MUTH) Elele in different trimesters.

Materials and Methods
Study Area
The study was carried out in Madonna University Teaching Hospital (MUTH), Elele in Rivers state, Nigeria.

Study Population
This includes apparently age-matched healthy pregnant and non-pregnant women attending Madonna University Teaching Hospital, Elele, Rivers State, aged between 22 and 43 years. A total of 60 samples, 15 sample as control (non-pregnant women), 45 sample as test (15 pregnant women in their first trimester, 15 pregnant women in their second trimester and 15 pregnant women in their third trimester).

Inclusion/exclusion criteria
Only consented apparently healthy subjects within the ages of 25 – 45 years were used for the study. Those that presented with any other form of ailment like malaria, anaemia, etc, were excluded from the study.

Ethical Clearance
This research was approved by the ethical committee of the institution and was monitored during the duration of the research. Rules and guidelines governing sample collection from humans and processing for research purposes were strictly adhered to.

Sample collection
A standard venepunture technique as describe by Bain et al. (2008), was employed. A sterile, dry, plastic syringes of 5ml capacity together with a 21g size needle was used for the collection of blood. A soft tubing tourniquet was applied to the upper arm of the patient to enable the veins to be seen and felt. The subjects were asked to make a tight fist which made the veins more prominent. A suitable vein (cubital vein) was then selected for venepuncture. The puncture site was sterilized with 70% ethanol and allowed to dry. The plunger of the syringe was withdrawn at the speed it is taking the vein to fill.

4mls of blood sample was collected and delivered into a commercially prepared Ethylene diamine tetra acetic acid (EDTA) container with a concentration of 1.2mg/ml of blood. The blood samples were mixed gently and thoroughly and analyzed within 6 hours of collection.

Sample analysis
Packed cell volume (PCV), haemoglobin concentration (Hb) and erythrocyte sedimentation rate (ESR) were performed using microhaematocrit, Cyanmethaemoglobin and Westergren methods respectively. Platelet count and total white blood cell count (TWBC) were performed by diluting with 1% Ammonium oxalate and Turk’s solution respectively and counted afterwards using improved Neubauer counting chamber as described by Cheesbrough (1998).

Statistical analysis
The results gotten were analysed using Statistical Package for Social Science (SPSS) version 14. P values < 0.05 were considered significant while p values > 0.05 were considered as not significant.
Discussion

Adaptation to pregnancy involves major changes in material metabolism in order to satisfy growing demands of the pregnancy outcome. The continuous physiologic adjustments affect the metabolism of all nutrients. The adjustments vary depending on the nutrition of the women, genetic determinants of the foetal size and maternal lifestyle. Thresholds in the capacity to adjust nutrient metabolism depending on the amount supplied exist for all nutrients (King, 2000). In pregnancy, the levels of different parameters generally decrease because of haemodilution and of increased needs.

From the results of this study, it was discovered that there was a significant decrease (p<0.05) in the PCV of the first trimester pregnant women (32.6 ± 1.91%) and second trimester pregnant women (32.66 ± 1.91%) when compared to the non-pregnant women (35.0 ± 3.22%). This finding is in line with James et al (2008). The decrease in PCV may be due to increase in plasma volume during pregnancy which causes haemodilution and conditions that promote fluid retention and iron deficiency.

There was a significant difference in the haemoglobin concentration of the first trimester pregnant women (9.58 ± 1.71g/dl) when compared to non-pregnant women (10.49 ± 1.81g/dl). Low haemoglobin is widely identified as a haematological abnormality and it is associated with adverse pregnancy outcome (James et al., 2008). Physiologic anaemia is the term often used to describe the fall in haemoglobin concentration that occurs during normal pregnancy which results from plasma volume increase (Hacksaw et al., 2011). It is very difficult to define a normal reference range for haemoglobin concentration during pregnancy.

There was a significant increase in total white cell count (TWBC) in the first trimester (8.2 ± 1.58 x10^9/L) when compared to non-pregnant women (7.0 ± 2.45 x10^9/L). Leucocytosis occurring during pregnancy is due to the physiologic stress induced by the pregnant state (Fleming, 1975). There is an absolute monocytosis during pregnancy, especially in the first trimester, but asserted that a total lymphocyte count rising in early pregnancy will remain elevated through pregnancy. This is may be as a result of the body building the immunity of the foetus and it is achieved by a state of selective immune tolerance and immunosuppression.

There was a significant decrease (p<0.05) in platelet count in first, second and third trimesters. This is in line with the work of Chandra et al., (2012) that worked on a large cross-section of healthy pregnant women (specifically excluding any with hypertension or any other ailments). Their work as well showed that the platelet count decreased during pregnancy, particularly in the third trimester. This is termed as “gestational thrombocytopenia.” It is partly due to haemodilution and partly due to increased platelet activation and accelerated clearance (Shehata et al., 1999). Gestational thrombocytopenia does not have complications related to thrombocytopenia and babies do not have severe thrombocytopenia. The platelet volume distribution will increase significantly and continuously as gestation advances, for reasons cited earlier.

CONCLUSION

It can be concluded that normal pregnancy in women alters significantly haematological parameters such as PCV, Hb, ESR and platelet counts.

It is recommended that pregnant women should take their dieting very serious in order to compensate for the changes caused by normal pregnancy on some haematological parameters. Vitamin supplementation is also advised.

CONFLICT OF INTEREST

We declare that we have no conflict of interest.

REFERENCES


Table 2: Mean ± S.D of some haematological parameters of non-pregnant women and pregnant women in their second trimester.

<table>
<thead>
<tr>
<th></th>
<th>ESR(mm/hr)</th>
<th>Hb(g/dI)</th>
<th>PCV(%)</th>
<th>TWBC (x10^9/L)</th>
<th>Platelet (x 10^9/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-pregnant</td>
<td>11.29 ± 4.77</td>
<td>10.49 ± 1.81</td>
<td>35.0 ± 3.22</td>
<td>7.0 ± 2.4527</td>
<td>9.13 ± 96.09</td>
</tr>
<tr>
<td>Pregnant</td>
<td>42.93 ± 16.01</td>
<td>10.0 ± 6.31</td>
<td>32.66 ± 1.91</td>
<td>6.83 ± 1.86</td>
<td>212.8 ± 59.35</td>
</tr>
<tr>
<td>P-value</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
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</tbody>
</table>

Table 3: Mean ± S.D of some haematological parameters of non-pregnant women and pregnant women in their third trimester.

<table>
<thead>
<tr>
<th></th>
<th>ESR(mm/hr)</th>
<th>Hb(g/dI)</th>
<th>PCV(%)</th>
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</tr>
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<td>Non-pregnant</td>
<td>11.29 ± 4.77</td>
<td>10.49 ± 1.81</td>
<td>35.0 ± 3.22</td>
<td>7.0 ± 2.45</td>
<td>279.13 ± 96.09</td>
</tr>
<tr>
<td>Pregnant</td>
<td>61.13 ± 28.58</td>
<td>8.96 ± 1.98</td>
<td>36.93 ± 3.63</td>
<td>6.60 ± 2.20</td>
<td>177.8 ± 59.57</td>
</tr>
<tr>
<td>P-value</td>
<td>&lt;0.05</td>
<td>&gt;0.05</td>
<td>&gt;0.05</td>
<td>&gt;0.05</td>
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</table>
Haematological Parameters in Pregnant...


INTRODUCTION

Ola nut is a caffeine-containing nut of evergreen trees of the genus Cola, primarily of the species Cola acuminata and Cola nitida. It is a central nervous system stimulant used in folk medicine as an aphrodisiac, an appetite suppressant, to treat migraine headache and indigestion. The aim of the present study was to investigate the effects of aqueous and di-chloromethane caffeine fraction extract of Cola nitida extracts on learning, memory and anxiety-like behaviours. Sixteen (16) adult Long Evans rats of both sexes, with average weight of 220 grams were randomly divided into four groups of four rats each: A, B, C and D were administered distilled water, caffeine fraction, aqueous extract and cola nut supplemented feed respectively. The Morris water maze test showed a non-significant decrease (P<0.05) in time taken to find the platform in all the treatment groups. The result of the elevated plus test showed a non-significant increase in the mean number of entry into the open arm, time spent in the open arm, rearing and number of head dip when compared with the control. In conclusion, the administration of Cola nitida and its active ingredient (caffeine) for 21 days interfered with spatial learning and memory and even anxiety like behaviour.

ABSTRACT

Ola nut is a caffeine-containing nut of evergreen trees of the genus Cola, primarily of the species Cola acuminata and Cola nitida. It is a central nervous system stimulant used in folk medicine as an aphrodisiac, an appetite suppressant, to treat migraine headache and indigestion. The aim of the present study was to investigate the effects of aqueous and di-chloromethane caffeine fraction extract of Cola nitida extracts on learning, memory and anxiety-like behaviours. Sixteen (16) adult Long Evans rats of both sexes, with average weight of 220 grams were randomly divided into four groups of four rats each: A, B, C and D were administered distilled water, caffeine fraction, aqueous extract and cola nut supplemented feed respectively. The Morris water maze test showed a non-significant decrease (P<0.05) in time taken to find the platform in all the treatment groups. The result of the elevated plus test showed a non-significant increase in the mean number of entry into the open arm, time spent in the open arm, rearing and number of head dip when compared with the control. In conclusion, the administration of Cola nitida and its active ingredient (caffeine) for 21 days interfered with spatial learning and memory and even anxiety like behaviour.

INTRODUCTION

Ola nut is a caffeine-containing nut of evergreen trees of the genus Cola, primarily of the species Cola acuminata and Cola nitida. It is one of the most common masticatory nut in Nigeria. It was reported to enhance alertness and physical energy, elevates mood, increases tactile sensitivity and suppresses appetite. Autonomic changes such as increased body temperature, increased blood pressure and increased respiratory rate were reported. Consumption of a diet comprising cola nuts for 7 days elevated the mean arterial pressure (MAP) of normal rats. It was reported to have some antibacterial effects; The work of Adeniyi et al., reported that the methanol extract of root bark for both Cola nitida and Cola milleni were found to be potent against both Mycobacterium bovis and strains of Mycobacterium vaccae. According to Muhammad and Fatima, aqueous and methanol extracts of red and white variety of cola nut showed antibacterial activity against Streptococcus anginosus, a gram positive bacterium. Caffeine is a bitter, white crystalline xanthine alkaloid that acts as a stimulant drug and an acetyl cholinesterase inhibitor. It stimulates the central nervous system first at the higher levels, resulting in increased alertness and wakefulness, faster and clearer flow of thought, increased focus, and better general body coordination, and later at the spinal cord level at higher doses. This stimulatory activity is achieved through several mechanisms including increased ATP production through cyclic adenosine monophosphate (cAMP) accumulation and inhibition of dopamine re-uptake. Weight loss was observed in all the groups during the first 15 days of study and over the 60 days after diabetes induction and administration of various dosages of caffeine. Learning is the process by which we acquire knowledge about the world, while memory involves encoding, storage and retrieval of such information for future use. The ability to look at an item, and remember what it looked like with just a second of observation, or memorization, is an example of sensory memory. The brain stores sensory information for very short periods of time in a working memory, to be able to use it later. Brain areas involved in the neuroanatomy of memory include the hippocampus, the amygdala, the striatum, or the mammillary bodies which are thought to be involved in specific types of memory. For example, the hippocampus is believed to be involved in spatial learning and declarative learning, while
the amygdala is thought to be involved in emotional memory 12.

**MATERIALS AND METHOD**

**Source of Plant Material**
Cola nitida was obtained from Yangoro market Kwangila, Zaria. Identification and authentication of the seed was done in the herbarium section of the Department of Biological Sciences, Ahmadu Bello University, Zaria and was assigned the specimen voucher no. 1526.

**Preparation of Extracts**
The fresh seeds of *Cola nitida* were grated into pieces and air dried. The dried pieces were ground into powder and weighed, 1000g of the powdered cola nut was used for the aqueous extraction using cold maceration. One thousand two hundred grams of another portion of the dried powdered cola nut was used for fractionation of the caffeine content, it was soaked with 50% methanol for 75 hours, the mixture was filtered and concentrated to 1/10 and was allowed to cool and made alkaline using ammonium hydroxide solution. It was partitioned with dichloromethane, chloroform fraction containing the caffeine was evaporated in vacuum to dryness. Four grams of caffeine crystal was obtained. The extractions were carried out at the Department of Pharmacognosy, Faculty of Pharmaceutical Sciences, Ahmadu Bello University, Zaria.

**Experimental Animals**
Sixteen (16) adult Long Evans rats were obtained from the Animal House of the Department of Human Anatomy, Faculty of Medicine, Ahmadu Bello University, Zaria. They were kept and maintained under standard laboratory condition for two weeks to acclimatize prior to the study.

**Determination of the LD_{50}**
The LD_{50} was determined using the up and down method 13. Six rats were dosed up and down. The first two rats were dosed below an already established LD_{50} >2000 mg/kg 14 and were observed for 48 hours, the physical examination showed no change in the rats. Two animals were dosed up by a factor of 1.5 multiplied by the already established LD_{50}. The LD_{50} was found to be greater than 3000mg/kg.

**Experimental Design**
Sixteen (16) adult Long Evans rats of both sexes, weighting 220 grams were randomly divided into four groups:
A = Control and was administered normal feed and distilled water
B = Administered 20% of the LD_{50} of caffeine fraction (38.4 mg/kg body weight).
C = Administered 20% of the LD_{50} of cola nut aqueous extract (600 mg/kg body weight).
D = administered 20% w/w cola nut supplemented feed. All administrations lasted for twenty-one (21) days.

**Spatial memory and learning (Morris water maze).**
Morris water maze test was done as outlined by Liu et al7. The rats were placed in a small pool of water which contained an escape platform hidden a few millimetres away and below the water surface. The rats were released and allowed to swim around the pool in search of an exit and subsequent trials were performed to know if the rat will be able to locate the platform in a shorter time. As the rat was learning to locate the hidden platform, the time was measured as latency and recorded, the procedure was conducted for five days as training. After the training, the rats were administered with *Cola nitida* extracts once a day over a period of three (3) weeks and the above procedure was repeated after every one week. The memory of the rats was evaluated and compared with the time in locating the platform before and during administration.
the groups were determined using One-way analysis of variance (ANOVA) followed by Tukey Post hoc test. Differences were considered statistically significant at 

\[ p < 0.05 \]

**RESULT**

**Morris water maze test**

The results of spatial learning and memory using Morris water maze test showed decrease in the mean-time taken for the animals to locate the platform Groups B and D (1.41 ± 0.05 and 1.66 ± 0.16 respectively) on the first week, Increase were in Group C and D (1.65 ± 0.98 and 2.18 ± 0.01 respectively) with subsequent decrease in Group B, C and D (1.72 ± 0.49, 1.87 ± 0.24 and 1.94 ± 0.26 respectively) in the third week. Group C showed significant increase in the second week when compared to the control group \((p < 0.05)\) as shown in Figure 1. 

**Figure 1:** Effect of treatment with extract of *Cola nitida* on mean latencies of rats in Morris water maze test. \(N = 4; *P < 0.05\) indicates significant difference compared to control

**Elevated plus maze test**

The result of the elevated plus maze showed increase in the mean number of entry into the open and closed arm in Group C \((5.25 ± 1.80 \text{ and } 6.75 ± 2.32 \text{ respectively})\). Although the observed increase were not significant when compared to the control \((p < 0.05)\) as shown in figure 2. The mean time spent in the open arm was observed to be decreased in Group B \((44.60 ± 34.57, \text{ on the other hand higher values for mean time spent in the closed arm were observed in Groups B, C and D (258.58 ± 28.37, 214.46 ± 26.97 and 212.51 ± 50.80 respectively). these values were also not significantly different from the control (p<0.05) as shown in Figure 3. Decrease was also observed in both grooming and head dip in Group B \((7.75 ± 1.70 \text{ and } 2.00 ± 0.00 \text{ respectively})\), while increase were observed in Group C and D for rearing \((4.50 ± 1.32 \text{ and } 5.00 ± 1.41 \text{ respectively})\) as shown in Figure 4.

**Figure 2:** Effect of treatment with extract of *Cola nitida* on mean number of entry into open and closed arm in Elevated plus maze test. \(N = 4; *P < 0.05\) indicates significant difference compared to control.
**DISCUSSION**

The results of spatial learning and memory using Morris water maze test in the present study showed that animals in the control group had an increased mean latency time to locate the hidden platform in the Morris water maze test at the third week of the experiment, and the treated groups had decreased time although no significant difference was recorded. This may be related to the effect of caffeine and cola nut as central nervous system stimulant, therefore increasing the activity in all the treated groups. This result agrees with the findings of 

**Figure 2:** Effect of treatment with the extract of *Cola nitida* on the mean number of entrance into the open and closed arm per 5 minutes. N=4; values considered significantly different from control at p<0.05. EOA = Entrance into Open Arm; ECA = Entrance into Closed Arm

**Figure 3:** Effect of treatment with the extract of *Cola nitida* on the mean time spent in the open and closed arm per 5 minutes. N=4; values considered significantly different from control at p<0.05. TOA = Time spent in the Open Arm; TCA = Time spent in the closed Arm

**Figure 4:** Effect of treatment with the extract of *Cola nitida* on the mean number of rearing and head dip per 5 minutes. N=4; HD = head dip. Values considered significantly different from control at p<0.05
CONCLUSION

In conclusion, the administration of *Cola nitida* and its active ingredient (cafeine) for 21 days from the present study resulted in decrease in time taken to find the hidden platform for all the treated groups in spatial learning and memory test using Morris water maze; and decrease in anxiety in Elevated plus maze test.

REFERENCES


Comparative Effect of Aqueous and...

Toxicity of Aqueous Extract of Cola Nitida (Sterculiaceae). Asian Journal of Biochemical and Pharmaceutical Research, 4 (2) :149 ISSN: 2231-2560


The primary pathology of sickle cell disease is the sickling of red cells which adhere to the vascular endothelium and the white blood cells (Frenette and Atweh, 2007). The vascular endothelium system is also activated in SCD and its role in this disease had been extensively reviewed (Hebbel et al, 2004). Biomarkers of the endothelial activation such as P-selectin, E-selectin and V-Cam are elevated in SCD compared to controls. (Ataga et al, 2008; Setty et al, 2012). The interaction of sickle RBCs, leucocytes and endothelial cells molecules results in recurrent vaso-occlusive events in post-capillary venules that lead to cyclic ischaemic - reperfusion injury to multiple organs (Frenette, 2002; Hebbel et al, 2009; Rees et al, 2010).

According to the World Health Organisation, it is estimated that 6 million affected with sickle cell disease reside in Africa (Modell and Darlison, 2008). There is an assumption that the life expectancy of SCD in Africa is much more lower than in the developed world. The phenotypic variability in manifestation of SCD ranges from asymptomatic to severe clinical disease affecting many organ.

Much progress had been made in treating this disease in developed world to minimise organ damage. Platt et al (1994) had described the progress made in the U. S in the prior two decades and predicted that all median survival will be over 40 years by the year 2000 as described in (fig 1 & 2) below. By the year 2010, 94% of children in the U.S had reach adulthood with minimum complications. This achievement is partly due to newborn screening programme and better supportive care, including vaccination streptococcus pneumonia, penicillin prophylaxis and well improved recognition and treatment of complications (Quinn et al, 2010).

The estimated birth prevalence of Sickle Cell Anaemia(SCA) in Tanzania is 7/1000 (WHO, 2006). If one assumes that this is representative of the urban population of Dar-es-Salaam, the population prevalence of the SCA patients attending the hospital is a maximum of 3.5/1,000. This leaves 50% of the SCA population unaccounted for and it is not known to what extent this reflects relatively well individuals not attending hospital, as opposed to loss due to premature death. The median survival in SCA patients in this cohort, comprising mainly older children and adults, was 33 years; which is 19 years less than life expectancy at birth (52 years) in Tanzania and is also markedly lower than for SCA patients (40–60 years) in the USA.
Management of Sickle Cell Disease...

(Platt et al., 1994) and Jamaica (Wierenga et al., 2001). This median survival of SCA is most likely overestimated, as it does not capture the individuals who died before diagnosis, or those who were lost during follow up.

Current treatment approach

There had been problems with decision making approach to treatment of SCD, we lack predicting the severity of individual patient. Several groups had examined variety of phenotypic and genotypic prognostic factor, but the only variable with a better outcome had been the HBF level (Platt et al., 1994).

Supportive therapy

The common treatment for majority of individuals with SCD remains supportive. Preventative approach include infection prophylaxis with regular penicillin vaccination, vaccination against Streptococcus Pneumonia and Haemophilus Influenza as well as blood transfusion when indicated. However, several studies had shown that mortality shows a sharp increase in early adulthood (Hasell, 2010;Quinn et al., 2010; DeBaun & Telfair, 2012). As indicated earlier 90% of SCD in the U.S are living up to adulthood.

Definite therapy

These are regular blood transfusion/exchange blood transfusion, long term Hydroxycarbamide (HC) and Haematopoetic Stem Cell transplantation (HSCT) therapy . Gene therapy remains a promising approach for the future. Regular blood transfusion may be also be considered as a definite therapy however a lot of side effects make this approach unsuitable for long term use. They have shown not to prevent silent infarcts (DeBaun et al., 2012) or the progression of Moya Moya disease (Bishop et al., 2011). Individual with regular blood transfusion have the tendency to develop alloantibodies and iron overload which must be managed.

Hydroxycarbamide

The recognition by Co-operative Study of Sickle Cell Disease report (Platt et al., 1994) that increase in HbF level predicted improved survival by inhibiting the precipitation of sickle haemoglobin had led to the use of agents that could promote HbF synthesis. First used in adults in the 1990s, Hydroxycarbamide (HC) was found to reduced episodes of crisis, reduction of blood transfusion (Charache et al., 1995). In addition to an increased HbF red cells were better hydrated and there was clear evidence that HC significantly improved life expectancy in long term use (Steinberg et al. 2003, 2010; Voskaridou et al., 2010). Most studies also reported restricted inclusion criteria for those eligible, subject were monitored for neutrophils counts and HbF levels, neutropenia was a common side effect. The authors suggested that HC is safe and effective when started early (Thornburg et al., 2012).

Haematopoetic Stem Cell transplantation (HSCT)

This was performed in a patient with SCD and acute leukaemia (Johnson et al., 1984). HSCT remains the only curative available to date. Approximately 600 individuals had undergone the procedure to date (Center for International Blood and Marrow Transplant Research, Minneapolis, Milwaukee, personal communication). Morbidity had been markedly reduced due to supportive care . A recent review (Hsieh et al., 2011) provides a more depth of analysis beyond the scope of this review. There is sharp increase in interest in the curative therapy, parental and patient accepting the risks of the procedure had also increased if recommended (Roth et al., 2012). Other important component in SCD pathology are haemolytic anaemia and decreased nitric oxide (NO) bioavailability (Kato et al., 2007). Intravascular haemolysis results in the release of free cell haemoglobin, plasma level are higher in SCD and undetectable in normal control. The excess haemoglobin saturate their scavenging molecules haptoglobin and haemopexin (Reiter, et al, 2002), and both levels are decreased in SCD (Muller-Eberhard et al., 1968). The free haem also consume NO to generate methaemoglobin and nitrate. The production of NO is depleted in SCD, Sickle red cells and the release of arginase degrades L-arginine the substrate for NO production by endothelial nitric oxide synthase (eNOS) (Morriss et al., 2005; Kato et al., 2007). The loss of NO in SCD impairs haemostatic functions which are contributors to the pathogenesis of SCD. However, priapism, defined as prolonged penile erection lasting >4 h, is a urological emergency and can result in fibrosis of the corpora cavernosa and permanent erectile dysfunction if not treated early. SCD is the commonest cause of priapism in children and is thought to be caused by chronic nitric oxide depletion within the penile vasculature due to chronic intravascular haemolysis, aberrant G-protein signalling, smooth muscle hypoxia, acidosis and impaired smooth muscle contraction (Donaldson et al., 2014). The management of sickle cell crisis remains unsatisfactory despite advances made in the last few decades. Evidence had shown that the use of unsophisticated approach to the use of opioid analgesics for pain management. Strong opioids analgesic drugs are potential toxic with adverse events, inappropriate dosing can result in fatalities, particularly related to respiratory depression or excessive sedation. The recent NICE clinical guidelines recommended that patients are monitored hourly for the first 6 hours and thereafter four hourly (NICE, 2012).

Transition from paediatric to adult care could have an impact on disabilities which may accumulate, 80% of patients in the U.S have one or more complications (Sebastiani et al, 2010). In childhood, most patient received care in a tightly structured paediatric unit with a strong parental monitoring and control. Patient, parents and doctors may experience difficulties moving to a different approach during transition to adulthood. Transition from paediatric to adult care remains a big challenge.
challenges which requires further exploration.

Future perspective

Nevertheless, improving the profile of SCD as a major health problem in sub-sahara africa, including the introduction of newborn screening programmes and the improved provision of even the most basic of medical care, will benefit the greatest number of patients with SCD worldwide. Sickle cell disease is an important but largely neglected risk to child survival in most African countries.

In the short term, refining the indications for access to known effective treatments is a major priority; for example, the accumulated data on hydroxyurea suggest that the benefits of the drug outweigh the risks in the vast majority of patients and that access to hydroxyurea therapy should be available to all who want it. At the same time, new therapies targeting specific mechanisms of HbF induction, endothelial dysfunction, pain management, organ damage and gene therapy are under intense research scrutiny (Hoots, 2012). Nevertheless, improving the profile of SCD as a major health problem in Africa and India, including the introduction of newborn screening programmes and the improved provision of even the most basic of medical care, will benefit the greatest number of patients with SCD worldwide. A good starting point would be the collection of more detailed and up-to-date data regarding the expected birth frequencies. The ideal approach is to establish a cohort of SCA patients, diagnosed at birth, and follow them up to determine rate and cause of death. Careful collection and analysis of data and publication of outcomes among children affected by these programs are essential. Secondly, studies to quantify the public health burden of SCD need to be conducted. Such studies require interdisciplinary collaboration. Universal or targeted newborn screening programmes, implementation of simple treatments such as vaccination and antibiotic prophylaxis, regular follow-up in specialist clinics and improved parental education have together led to major reductions in the early mortality from SCD in high- and middle-income countries. For example, simply teaching parents how to palpate their children's spleens led to a 90% reduction in mortality from splenic sequestration crises in Jamaica (Emond et al, 1985).

REFERENCES

20. Ataga, K., Moore, C., Hillery, C.,Jones, S., Whinna, H.,

Nigerian Biomedical Science Journal Vol. 12 No 4 2016
Management of Sickle Cell Disease in...


46. Nigerian Biomedical Science Journal Vol. 12 No 4 2016