

Clinical and Socio-Demographic Characteristic of Children who receive Emergency Blood Transfusion in Orlu, Imo State Nigeria

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SUMMARY

Background: Severe anaemia requiring urgent blood transfusion is a major cause of morbidity and mortality among children in the developing world. This often tasks the blood transfusion services of any typical tropical leading to transfusion of blood obtained from private laboratories whose services are often questionable. Under these circumstances the children are exposed to an increased risk of HIV and other blood borne infections.

Aims and Objective: To determine the clinical and socio-demographic characteristics of children who receive urgent blood transfusion in Orli, Imo State, Nigeria.

Methodology: This is a retrospective review of records of 53 children who received emergency blood transfusion during the period 1st June 2006, to December 31st 2007 at the Children's emergency ward of the Imo State University Teaching Hospital, Orlu, Nigeria.

Results: Out of the 63 patients who were admitted within the period under review, 53(8.4%) received urgent blood transfusion. More than 80% of these patients were below 5 years old. There was no sex predilection. The patients from the medium social class presented with severe anaemia more frequently than other social classes. The need for urgent blood transfusion correlated significantly with medium social class. Malaria was the commonest case of severe anaemia requiring urgent blood transfusion either singly (52.8%) or in combination with other disease conditions (24.5%).

Conclusion: Severe anaemia associated with acute malaria is a major cause of morbidity and mortality in children especially in those less than 5 years old. The need for urgent blood transfusion correlated significantly with being from a medium social class family.

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INTRODUCTION

Anaemia is a common presentation of many childhood illnesses in the tropics. It is sometimes severe enough to require an urgent blood transfusion in order to save life. This often tasks the blood transfusion services of the hospital in order to meet the transfusion requirements. In some hospitals, about 20 – 50% of children need emergency blood transfusion.^{2,3} Unfortunately, many of these hospitals cannot maintain an adequate transfusion services to meet the demand, thus increasing the incidence of pediatric HIV infection and other infectious diseases. This is often worsened by transfusion of blood obtain from private laboratories whose services are often questionable. Even screened blood can be infectious, the risk depending on background prevalence among donors and quality of screening⁴. It is estimated that about 15-25% of all cases of African Paediatric HIV/AIDS cases may have been from blood transfusion.⁵

We therefore set out to study the clinical and socio-demographic characteristics of children who need emergency blood transfusion in order to provide data for effective measures towards reducing the need for urgent blood transfusion and the attendant risk of HIV and other blood infections.

PATIENT AND METHODS

The medical records of all children who receive emergency blood transfusion on presentation at Children's emergency room of the Imo State University Teaching Hospital, Orlu, during the period 1st June, 2006 to December 31st, 2007 were reviewed. Approval for the study was obtained from the Research and Ethics committee of the hospital. The information extracted from the records were age and gender of the patients, clinical diagnosis at presentation, basic laboratory investigations done (Full blood count- haematocrit, white blood cell count including total and differentials, blood smear for malaria parasite, HIV screening, G6PD status and Haemoglobin electrophoresis in patients with clinical impression of sickle cell anaemia), hospital management and the eventual outcome. Social class of the patients was derived using a modification of Odejide's recommendation.⁶ Data were analyzed using the Microsoft Ecel.

RESULTS

Of the 633 admission during the period under review, 53 patients received emergency blood transfusion. This gave an

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emergency blood transfusion rate of 8.4% in the children's emergency room. This was made up of 26 males and 27 females (M: F = 1.1). The youngest among them was 5 months while the oldest was 16 years. There was no gender difference among the patients (Table 1).

Over 80% of those who were transfused were under 5yr. over 75% of those who received emergency blood transfusion were from the middle socioeconomic class families. This was statistically significant ($p < 0.05$) (Table 2). The mean haematocrit at presentation was 12.3%. Five point seven percent of the patients were reactive to HIV antibodies before they were transfused. Malaria was the commonest cause of anaemia either single in 52.8% or in combination with other disease conditions in 24.5% of the cases (Table 3). The mortality rate was 11.3%.

Table 1: Patient spread by Age and Gender

Age range (yrs)	Gender		Total (%)
	M	F	
<1	3	7	10(18.3)
1-5	20	13	33(62.3)
6-10	1	3	4(7.5)
11-15	2	2	4(7.5)
16-20	-	2	2(3.8)
Total	26	27	53

Table 2: Socio-economic class distribution of patients

Social Class	No (%)
Upper	10(21.3)
Middle	36(76.6)
Low	1(2.1)
Total	47

Table 3: Causes of severe anaemia

Clinical Impression	No. of Cases (%)
Malaria alone	28(52.8)
Malaria in combination with Bronchopneumonia	7(13.2)
with Sickle Cell anaemia	4(7.6)
with G6PD Deficiency	2(3.7)
Bacterial infections alone	8(15.1)
Others	4(7.6)
Total	53

G6PD (glucose-6-phosphate dehydrogenase)

DISCUSSION

Severe anaemia is a major cause of morbidity and amongst children in developing countries.^{1,23} Consequently the paediatric units of these countries are one of the main avenues for blood transfusion services. The frequency of emergency blood transfusion in our study was 8.4%. This is however lower than the rate of 20-50% obtained in similar studies.^{3,7,8} This may be due to ignorance and poverty in this environment as many parents whose children may need emergency care cannot access hospital services. As has been observed in a previous study⁷, the prevalence of severe anaemia and thus the need for

emergency blood transfusion is not related to gender in this report.

In agreement with similar studies⁷⁻¹⁰, we noted that the majority of our patients who received emergency transfusion were less than 5 years. Because of immaturity of their immune system, severe malaria is prevent in this age group. Among the factors implicated from previous studies in causation of anaemia in these patients include haemolysis of both parasitized and non parasitized red blood cell, bone marrow suppression and ineffective erythropoiesis.⁷ We noted that most of the transfused patients came from the middle social class families. This is not surprising since they can afford to pay for hospital service. The lower value noted for the low social class may not be a true reflection of the incidence amongst this class because of poverty leading to lack of access to appropriate and adequate medical attention and late presentation. As noted in previous studies⁷⁻¹¹ malaria was the commonest cause of severe anaemia either single or in combination with other diseases. The cause of anaemia in developing countries is usually multifactorial.^{9,12} Although malaria plays key role in endemic countries, it is clear that poor nutrition with micronutrient deficiencies, intestinal helminthes, HIV infection, haemoglobinopathies and common bacterial infections make important contributions.¹² Although screening of blood is mandatory and essential, it is not a panacea for infection free blood donations.^{13,14} In sub-saharan Africa, transfusion of improperly screened blood accounts for 15-25% of paediatric HIV infections.¹¹⁻¹⁵ Since malaria is the major cause of anaemia requiring blood transfusion in tropical countries, control of malaria infection will reduce the need for transfusion and thereby reduce the risk of exposure to blood borne infections.

In general a very low haemoglobin level at presentation is associated with death shortly after admission with case fatalities ranging from 3.4-17.2%.^{16,17} In such settings blood transfusion does not reduce the mortality rates. The 11.3% case fatality obtained in this study is comparable to 12% obtained in a Kenyan study¹⁶. However mortality due to severe anaemia may be considerably greater in the communities since the majority of hospital case will have received blood transfusion. The vulnerability of children aged less than 5 years to severe malaria anaemia and the contribution of poverty to increased childhood morbidity is highlighted. Prompt and appropriate treatment of malaria, coupled with efforts to reduce its transmission will reduce the burden of the disease. Health education, promotion of child survival strategies together with improvement in the socioeconomic status of families will further reduce the incidence of severe anaemia and thus the need for emergency blood transfusion.

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