Research Paper Medical Science

Erythropoietin (Epo) Level in Sickle Cell Anaemia(HbSS) With Falciparum Malaria Infection in University Health Services,Michael Okpara University of Agriculture,Umudike,Abia State,Nigeria.

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ABSTRACT

Malaria infection is a common infection in this part of the world especially falciparum malaria in the sickle cell anaemia patients.Sickle cell anaemia patients are known to be highly anaemic due to chronic haemolysis.The studywas done to determine the level of erythropoietin in HbSS subject suffering from falciparum malaria.The result showed significant incraese ($p<0.05$) when the Epo level of HbSS subjects with falciparum malaria was compared to HbSS subject at steady state.This might happen to compensate for the degree of anamia in them.

KEYWORDS Erythropoietin (Epo) , Sickle Cell Anaemia(Hbss), Falciparum Malaria Infection

INTRODUCTION

Erythropoietin (Epo) is a glycoprotein hormone that controls erythropoiesis.Human erythropoietin has a molecular weight of 30.4Kda (Obeagu,2015).It plays an important role in the brain's response to neuronal injury and in wound healing process (Siren et al.,2001;Haron et al.,2003).It also improves memory (Miskowiak et al.,2007).Erythropoietin has been shown to exerts its effects by binding to the erythropoietin receptor(EpoR) (Obeagu,2015).Erythropoietin binds to to erythropoietin receptor on the red cell progenitor surface and activates a JAK2 signaling cascade.

Erythropoietin levels in blood are quite low in the absence of anaemia,at around 10mU/ml.However,in hypoxic stress,erythropietin increases.It is synthesised by renal peritubular cells in adults.Regulation rely on a feedback mechanism measuring blood oxygenation (Jelkman et al.,2007).

Sickle cell anaemia is an inherited disorder in which the red blood cells become rigid and stickly,and change from being disc-shaped to being crescent-shaped.The change in shape is as a result of an abnormal form of haemoglobin which leads to damage of some organs(Nnodim et al.,2015).Sickle cell anaemia is associated with chronic anaemia with a lot of crisis especially when malaria infection is involved.Therefore,it is of great importance to study the level of erythropoietin in sickle cell patients with falciparum malaria in Univeristy Health Services Department of Michael Okpara University of Agriculture,Umudike,Abia State,Nigeria.

MATERIALS AND METHODS

STUDY AREA: The study is conducted in the University Health Services Department of Michael Okpara University of Agriculture,Umudike,Abia State,Nigeria.

SUBJECTS: Fifteen HbSS subjects with falciparum malaria infection aged 15-35 years and twenty HbSS at steady state all diagnosed with alkaline celulose acetate haemoglobin electrophoresis were used for the study.

BLOOD SAMPLE:5ml of blood was collected from the subjects into plain tubes and alloed to clot and were spun to collect serum for the assay.

ETHICS: Oral consents were made to the subjects prior to sample collection and the confidentiality ensured.

ERYTHROPOIETIN ASSAY(Elabscience,2015):Erythropoietin was measured in the samples by Sandwich enzyme linked immunosorbent assay (ELISA) of Elabscience.The manufacturer's instruction was followed carefully.

STATISTICAL ANALYSIS: The reuslts were expressed as mean ± standard deviation.The results were analysed using student t-test and statistical significance is set at $P<0.05$.

RESULT

TABLE:Erythropoietin level in HbSS and HbSS with falciparum malaria

Parameter	HbSS	HbSS(P.f)	Significnace level
Epo(Mu/ml)	171±3.5	185±2.7	P<0.05

DISCUSSION

The table above showed that mean Eerythropoietin level in HbSS with falciparum malaria was 185±2.7 while HbSS at staedy state was 171±3.5.When the values where compared there was significant incraese ($P<0.05$) of HbSS with subjects with falciparum malaria to HbSS subjects who were at steady state.The result was higher than the report of Nnodim et al (2015).This significant increase may be because of burden of malaria with incraesde hypoxia which increases the level of hypoxia inducible factor(HIF)(Obeagu,2015).May be it is to compensate for the degree of anaemia in them.

CONCLUSION

The study showed significant incraese in erythropoietin level of the subjects.This points to the level of anaemia in thos subjects studied.Sicke cell anaemia patient with falciparum malaria should be treated with erythropoietin drugs. To reduce blood transfusion to bring about normoxic conditions in the patients.Sickle cell anaemia patients need wholistic care and mangement.

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