

PREVALENCE OF SICKLE CELL DISEASE IN PREGNANT WOMEN AND NEONATES IN AFRICA

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ABSTRACT

This review article has been conducted in order to evaluate the way of managing sickle cell diseases in African countries. Reviews of four researches have been reviewed. All of them mentioned that sickle cell diseases lead to complications during pregnancy, parturition and perinatal period. The study of Sickle Cell Disease in Pregnancy Maternal and Fetal Outcome in Port Harcourt in Nigeria this study has done in 4500 mothers booked during prenatal care and the results indicated that 0.2% of them had SCD. The study indicated that where malaria is endemic maternal complications due to SCD increases like 60% had cesarean section, 20% postpartum hemorrhage, preeclampsia and eclampsia. The argument comes by recommending the government to do early SCD detection. The study conducted in Uganda on sickle cell trait and disease focusing on early detection of SCD in infants mentioned that prevalence is high in Sub-Saharan Africa; the argument is that there is no specific studied universe. The study on Sickle Cell Disease in Pregnancy- Trend and Pregnancy Outcomes at a Tertiary Hospital in Tanzania published in 2013 done by Projestine S. Muganyizi, Hussein Kidanto at Muhimbiri National Hospital. The purpose of the study was to evaluate and compare outcomes of SCD deliveries and non SCD deliveries. All the women delivered from 1999 to 2011 in MNH was 157,473 and 149 were SCD deliveries in which 17 deaths occurred, thus made an incidence maternal death of 1141 per 100,000 deliveries against 439 per 100,000 deliveries for non SCD deliveries. This is due to perinatal complications. If managed at district hospital level this high mortality from SCD is reduced. The study done in great lake region from 2004 to 2006 Evaluated a sample of 1825 neonates sampled and found that 97(5.32%) had SCD. based on this review; we recommend health education during prenatal period. Governments also are recommended to support early detection of SCD to manage complications. Proposed model can help in each steps of managing this silent killer.

Keyword: - Sickle Cell Disease, Pregnancy, Hospital, Complications and Neonate

1. INTRODUCTION

Sickle cell disease (SCD) is one of the supreme public health problems of this era. It is a genetic disease of the hemoglobin chain of the red blood cells. [6][13]. This is a chronic condition characterized by acute complications which later can lead to damage to body organs when poorly managed or left untreated. The SCD gene causes an abnormality in the iron-rich protein hemoglobin that is responsible for carrying oxygen through the blood and giving blood its red color. The abnormal hemoglobin lead to “sickle shape” of the cell resulting in irregular blood flow [3]. Pregnancy in sickle cell disease is at very high risk. Many reports have shown a significant maternal risk of morbidity and mortality and high perinatal adverse outcomes and patients with SCD who survive childhood. This implies that they are more likely to suffer aggravated morbidity and mortality. And this is reported especially in Low and middle income countries where increased maternal and perinatal morbidity and mortality is associated with SCD [8][5][4][3][1][14].

Globally, millions of people are living with SCD and is more widespread among persons whose ancestors were from sub-Saharan Africa where it is estimated that SC is found in one in every 500 Africans. [15], In particular

parts of the world, as with many African countries, the prevalence can be as high as 30% [6][9]. In west and Central Africa it is the most common hemoglobinopathy. 25% of the people have sickle cell (SC) trait while 2–3% of all infants are born with a form of this disease. Whereas in USA estimated 80,000-90,000 Americans of African extraction are affected by SCD, while about 3 million have SC traits. [9]. According to the back ground of this review, aimed at highlighting the prevalence rate of sickle cell diseases across the globe,

2. PROBLEM STATEMENT

Sickle cell disease is a public health burden globally but concentrated in low income countries especially in Africa, and causes more than 90% of children morbidity in United State of America. Information from sickle cell trait and sickle cell screening test in England in 2015 shows that 6% of pregnant women have a gene of hemoglobin disorder, 1 in 300 newborn babies has a SCD. It is anticipated that 300,000 children born with SCD each year globally of which 75% are from sub-Saharan Africa [2] [7]. East Africa has high frequency of SCD where 20% - which is about 2500 of the neonates born with SCD- in Uganda and 13% in Tanzania. World health organization reported that 50-80% will die before adulthood due to SCD in sub-Saharan Africa. This is not limited to pregnant women, once they have SCD; some complications will occur during pregnancy, parturition that which can lead to death. If nothing is done, the problem will grow up and lead to difficulties of management.

3. CRITICAL REVIEWS

The study of Sickle Cell Disease in Pregnancy Maternal and Fetal Outcome in Port Harcourt, Nigeria conducted by H. A. A Ugboma¹ and I. O. George during their retrospective study started from January 2007 – December 2011, the study universe was the total of 4,650 women who were booked for antenatal care. It was a retrospective study. Sickle cell disease have various forms, the result shows that 18% were HbAS, 0.1% were HbAC, 0.2% were HbSS and 0.02% were (0.02%) HbSC. All these forms of sickle cell disease can have complication but severe with those of HbSS, this is sickle cell anemia, the results shows that low birth weight is 50% for those with –SS which is high comparing to other forms of SCD and their complications prematurity level was 40% but malaria is a big problem in this type of sickle cell disease where 80% got malaria. The first argument here is that the results indicated different types of SCD that faced women attended prenatal care in Port Harcourt but they showed complications for one type, I wonder if other forms of sickle cell diseases cannot cause any complication for both pregnant women and neonates, this study was to explain this statement, I would like to remind health workers to pay attention on all of those with any type of SCD as it can lead to complications once missed intervention. The second argument comes on conclusion where In the aforesaid study a multidisciplinary team collaboration has been recommended by the researcher because of high maternal and fetal losses caused by SCD. Accordingly, early screening is recommended to be done by government because as the researcher highlighted the results of this study would not exactly reflect the real prevalence of SCD in Nigeria compared to the previous studies which show a bit high prevalence, the inaccuracy of the study results is related to the fact that many children born with SCD die early i.e before child bearing age.

According to the study “Burden of sickle cell trait and disease in the Uganda Sickle Surveillance Study” Published Online January 28th, 2016, in Lancet Glob Health, where punch samples from dried blood spots routinely collected from HIV-exposed infants in ten regions and 112 districts across Uganda for the national Early Infant Diagnosis program. Though SCD prevalence is actually high in sub-Saharan countries, according to the study subjects’ health status, might have contributed much too high prevalence results. HIV- exposed or/ and HIV positive infants shouldn’t represent in general the whole neonate population because of their different health status. Again, the specific target population used in the study i.e. infants exposed to HIV, has not been mentioned in the topic; it only says “Burden of sickle cell trait and disease in the Uganda”. It would be better if it is titled as follows: ‘Burden of sickle cell trait and disease amongst HIV-exposed children in Uganda’.

The study on Sickle Cell Disease in Pregnancy- Trend and Pregnancy Outcomes at a Tertiary Hospital in Tanzania done by Projestine S. Muganyizi, Hussein Kidanto at Muhimbiri National Hospital which aimed to compare outcomes of SCD deliveries with those of the general population of women who delivered at MNH without SCD, showed that of 157,473 deliveries at MNH, 149 were SCD deliveries in 17 deaths occurred, thus made an incidence maternal death of 1141 per 100,000 deliveries against 439 per 100,000 deliveries for non SCD deliveries. Obviously SCD women’s delivery outcomes must be totally different because the later complications of SCD in pregnancy are life threatening and fatal if left untreated early. Therefore keeping other health problems that non SCD woman might

have had, the delivery would even be considered safe despite of inconveniencies. I may suggest an important thing, they should mention the real cause of death after delivery, and it can be other obstetrical complications which is different from SDC. Remember that MNH is referral hospital where the most complicated cases who have not been managed at the district hospitals are admitted, this means referred cases need tertiary management, which may imply that few cases are received at the referral hospitals, the question is that if the study results represent the situation in general, if it is so, the real situation was hidden due to the fact that a large number of SCD sufferers are managed at district level and down wards. Based on the study of Scott and colleagues, Sickle Cell Disease in Africa is a Neglected Cause of Early Childhood Mortality. Conducting similar studies at district level and/or community screening is suggested, in this way it is expected that real situation status be better discovered.

Mutesa. L and his colleagues in their study “Neonatal screening for sickle cell disease in Central Africa” published in *Journal of Medical Screening*, 2007, evaluated the feasibility of systematic neonatal screening for sickle cell disease in the region of Great Lakes in Central Africa using ELISA test. This study was carried out in the main maternity units in Rwanda (Kigali and Butare), Burundi and Eastern part of DRC Goma from 2004 to 2006. Their results showed that out of 1825 samples screened, 97 (5.32%) had sickle cell anemia. Sickle cell anemia is a type of sickle cell diseases which threatens the lives of sufferers when not treated early And leads to death of an individual at early age, looking at health services seeking procedures in central and east African region health services are decentralized. In this case maternal and child health care services are obtained at the community and health centers level respectively. At the level of community and health centers suitably screening for early detection can be more effective rather than doing it at referrals in urban areas. Looking at this in Rwanda context, ELISA diagnostic test isn't done in district hospitals laboratories or currently district hospitals laboratories don't have the capacity to perform ELISA diagnostic test. Not only that, also But also this test is very expensive to be carried out easily in district The distribution of ELISA test at the health centers level is not affordable in lower economic countries including Rwanda and Burundi, I would rather suggest the governments of these countries to emphasize on health education, training of health professionals especially those at primary level to increase their awareness about sickle cell disease and introduction of periodic blood samples collection to be tested at the referral level where costs of laboratory technicians and materials can be reduced to prevent high costs.

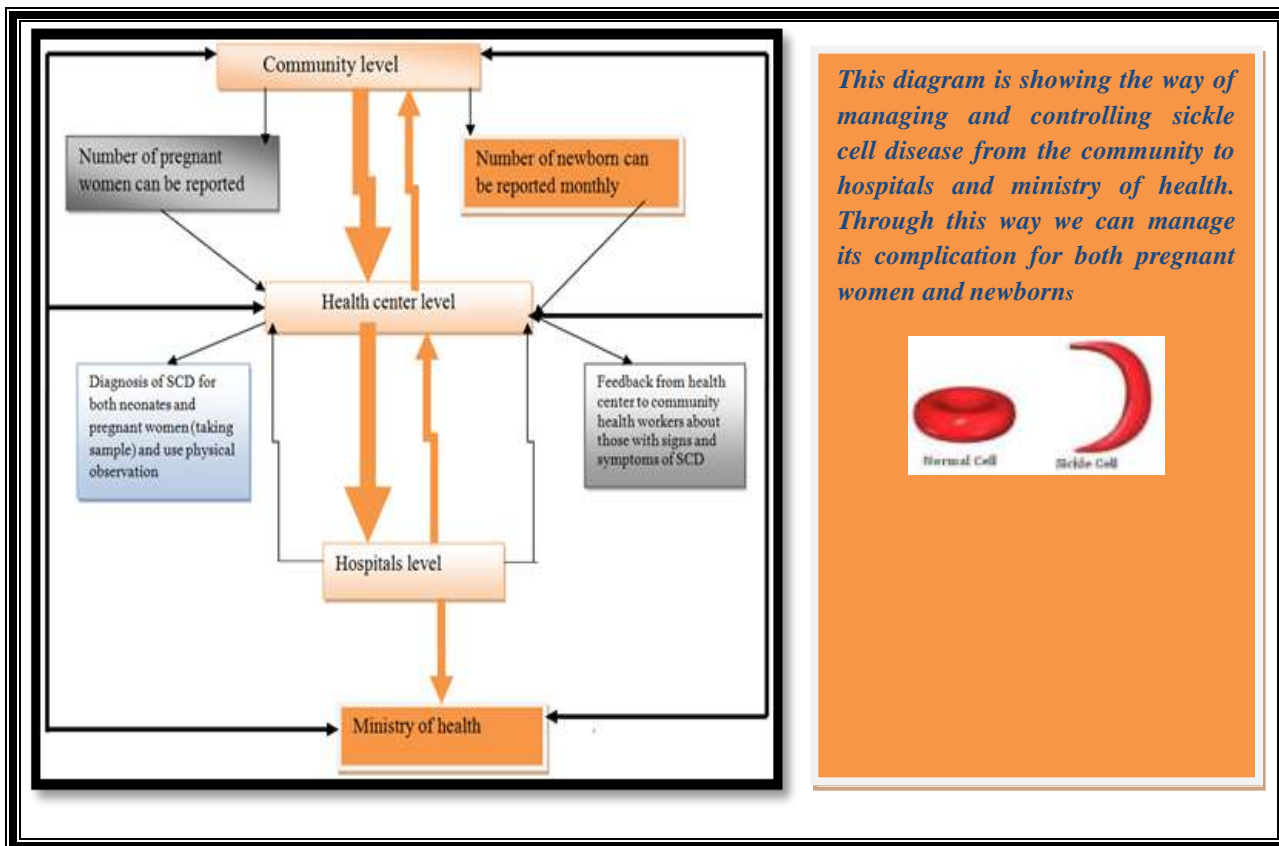
4. CONCLUSIONS

Sickle cell disease is silent killer disease which has been ignored in most of the countries especially in African countries. According to reviewed papers, highlighted and significant statistics show a need for concrete interventions by the governments despite of the current strategies in those which already have the protocols about the disease management. Sickle cell diseases, is not routinely tested in most developing countries and low income countries, then the survivors are screened in later ages. Pregnant women in their reproductive age are at very high risk of maternal fetal complications including death and premature deliveries. SCD becomes a chronic disease, when poorly managed and it takes patients' resources and the country as well because these sometimes need blood transfusion and frequent hospitalization. Therefore, a multidisciplinary task for SCD management is needed, though SCD is a hereditary disease which cannot be prevented easily, early screening, and education to increase awareness of the disease, establishment of SCD management centers in community areas can help to reduce early death of children and maternal death or serious life threatening conditions related to SCD.

5. RECOMMENDATIONS

Based on this article review, I would make the following recommendations: Education strategies should be established as the key tool for preventing maternal and fetal complications. This can be done through antenatal care and postnatal to increase awareness of parents of sickle cell disease and survival chances. Governments should put into consideration the how burden sickle cell disease is to the lives of pregnant women and their children and establish mechanisms through which SCD cases should be detected early via programmed screening of pregnant women and children after delivery.

6. PROPOSED MODEL SUMMARIZING SCD CONTROL AND MANAGEMENT



FUGURE1: The diagram presenting model of controlling and managing sickle cell diseases.

The field of community health is growing quickly in health system in all parts of the world. Community health workers have played an important role especially in maternal, newborn and child health in Rwanda. This diagram shows us that the first stage of managing sickle cell disease start from identifying pregnant women and newborn monthly. It is clear, some may say that we can use antenatal and maternity registration but depending on some countries weaknesses some pregnant women may fail attending for prenatal services up to delivery. Community health workers may always report to health center, health center may do simple diagnosis to identify those with signs and symptoms of SCD, then reply to community health workers and report to hospitals. Question may be why to reply to community health workers before hospital diagnosis, it is necessary to reply them because they may help in managing complications while waiting hospital results. Hospital may be district, provincial or referral hospital, it depends on where the service of SCD is provided. In Rwanda this service is organized in referral hospitals. Hospitals report burden of diseases to ministry of health so that it helps in finance and needed materials and equipments to manage diseases, ministry of health may help in decentralizing this program of diagnosis of SCD at the secondary level. This program of SCD screening is costly but early diagnosis of SCD is essential to prevent its complications, ministry of health have to build a budget that supports this program from the community up to hospital levels as indicated on diagram. Health education must be provided in the community.

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