THE EFFECTS OF SICKLE CELL DISEASE ON MATERNAL MORTALITY AND MORBIDITY

Ihuoma C. Nwankwo
National College of Natural Medicine
October 26, 2015

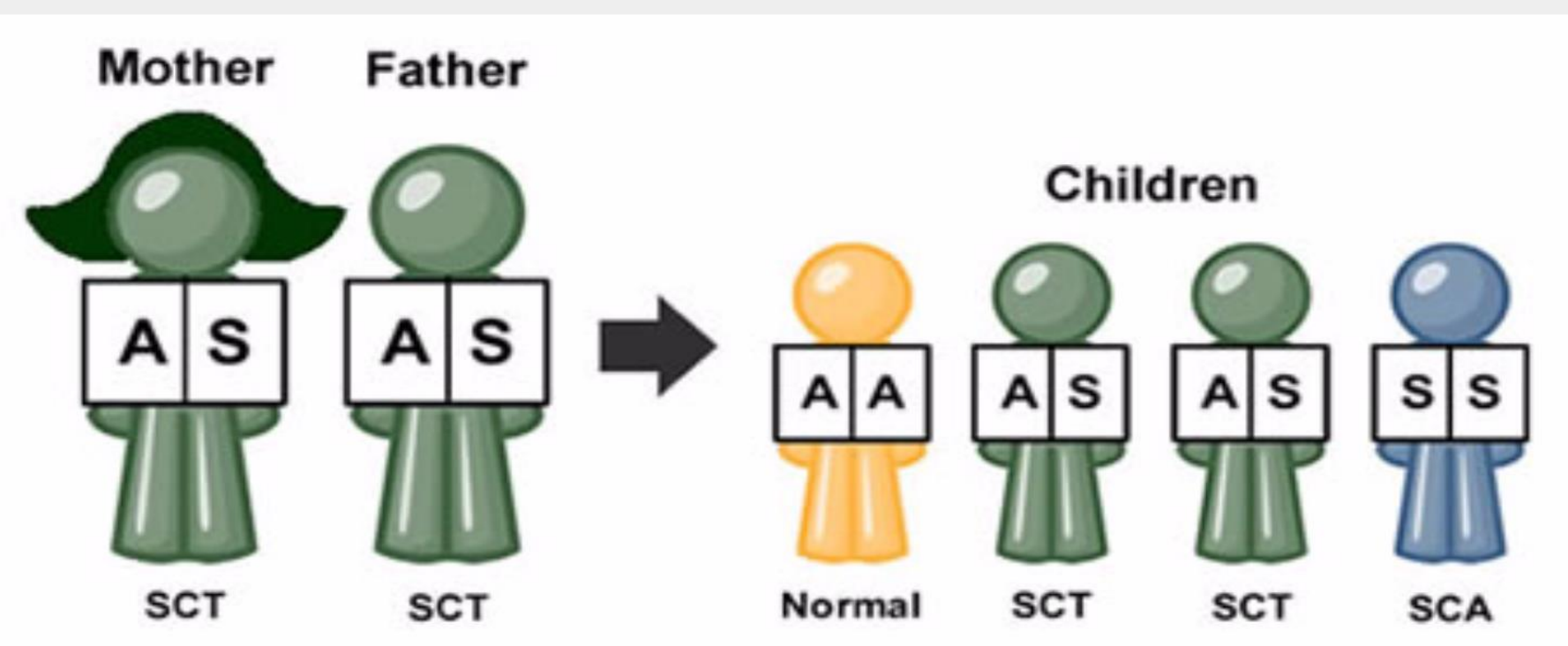
Sickle Cell Disease: A brief Overview

- Sickle Cell PSA
- https://youtu.be/Ttt9h81H_sc

Sickle Cell Disease:
A brief Overview:

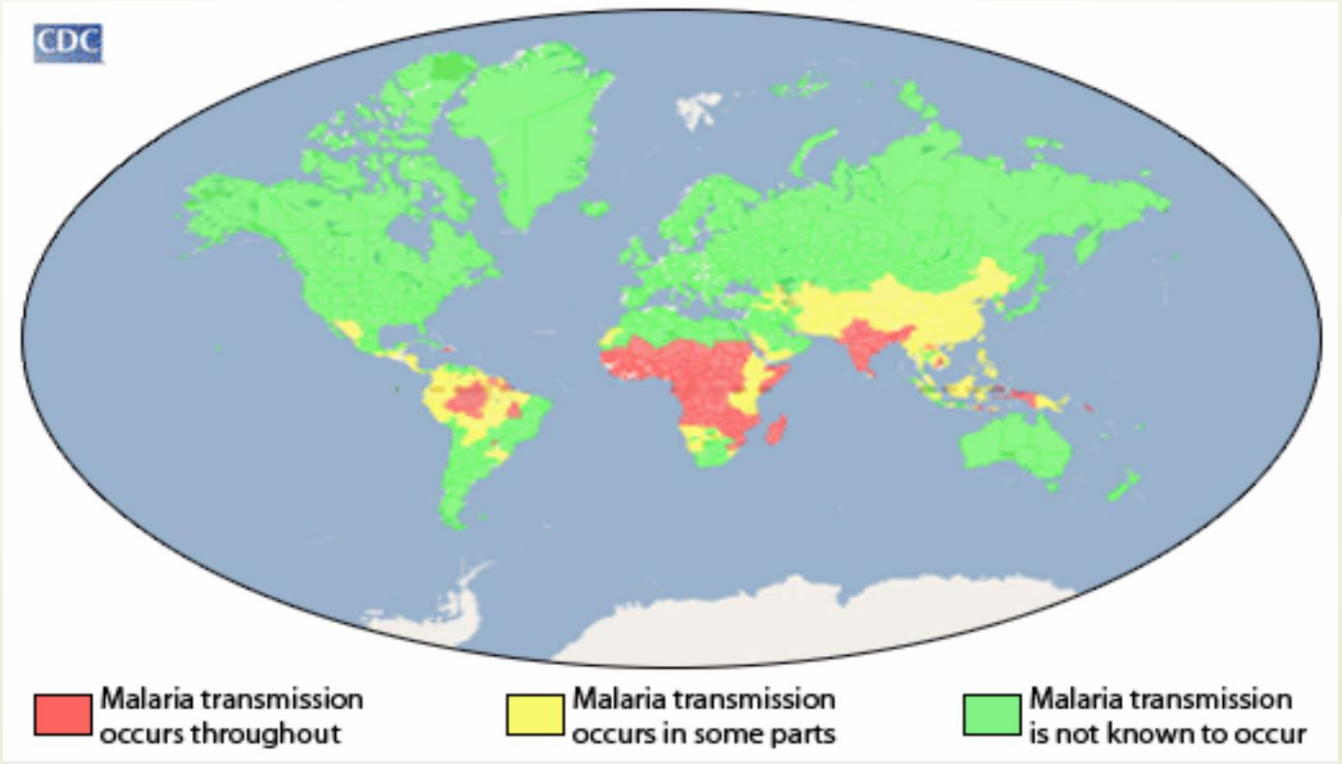
- Most common monogenetic blood disease.
- Affects approximately 30million lives globally.
- Caused by an abnormal protein mutation in hemoglobin.
- Occurs at conception: one copy of sickle gene inherited from each patient.
- Varied forms of the disease. Sickle Cell Anemia is most common.

- https://youtu.be/9AHFHleYwdU



Who can SCD Affect?

- Concentrations of disease originally found in malaria endemic areas.



Pregnancy and Sickle Cell Disease

- Improvements in SCD treatment have led to more women able to reach reproductive years.
- SCD causes chronic injuries to major organs over life span.
- Pregnancy can create additional burden to already compromised body systems.

Common causes of Maternal Morbidity and Mortality with SCD

- Pulmonary complications such as Acute Chest Syndrome
- Vaso-occlusive crises
- Infection
- Anemia
- Preeclampsia
- Eclampsia
- Impaired cardiac function
- Preterm Birth
- Post partum hemorrhage
- Pulmonary thrombosis

Associated Fetal Complications

- Intrauterine fetal growth impairment
- Low Birth Weight rates higher with SCD pregnancies
- Spontaneous abortions
- Premature births
- Still births

Pregnancy Complications

- Stress, dehydration, over-exertion, cold, infection leading to crises.
- By reproductive age, most women with SCD have functional or surgical aspleenism.
- Third trimester and puerperium: most vulnerable to crises, pulmonary complications, infections.
- Higher rates of LBW, miscarriages and stillbirths in SCD populations.

Economic Influences

- Fewer adverse outcomes in developed countries.
- Mortality rates much higher in developing world.
- Access to care in most Sub-Saharan African countries.
- Lack of health policies and infrastructure.

Other Economic Disadvantages

- Lack of adequate screening measures.
- High risk home births (no access to emergency and/or tertiary care services).
- Inadequate vaccinations.
- Presence of malaria complicates crises.

Case Studies

- Most are retrospective
- Extreme variability in disease presentation prevents development of appropriate protocols.
- Treatment practices in developed countries may not suit developing world due to inadequate infrastructure.

Retrospective Case Studies: Prophylactic blood transfusions

- Did not significantly decrease morbidity and/or mortality.
- Some studies showed less painful crises.
- Risk of transfusion reactions, alloimmunization, iron overload, excessive clot formation.
- Transfusion indicated on case by case basis according to symptoms.

Measures for Better Outcomes

- Information and education
- Screening and genetic counselling for couples.
- Family planning services
- Easy access to tertiary and emergency care services
- Encourage up to date flu and pneumonia vaccinations
- More frequent biometric scans of fetus

Outcome Improvement in Low to Middle Income Countries

- Education and awareness
- Screening of couples
- Hydration and nutritional status to prevent crises
- Malaria prevention and early detection of parasitic infection
- Training of family members to recognize early signs and symptoms
- Policy changes that provide better and easier access to emergency health services

We've Come This Far….

- Major advances in healthcare have led to better life expectancy for people with SCD
- Still not completely understood
- No known universal cure for SCD
- Herbal management in developing countries
- Further research and case studies needed

We can go much further…

Discussion Questions

- Do you know of other ways to prevent crises in this population?
- How else can we enable women at a grassroots level, take better care of themselves with sickle cell disease?

References

- Ameh, SJ, Tarfa FD, Ebeshi BU. Traditional herbal management of sickle cell anemia: Lessons from Nigeria. *Anemia*. 2012;2012:1-15. doi: 10.1155/2012/607436.
- Asnani MR, McCaw-Binns AM, Reid ME. Excess risk of maternal death from sickle cell disease in Jamaica: 1998-2007. *PLoS One*. 2011:6(10):e26281. doi: 10.1371/journal.pone.002621.
- Boulet SL, Okoroh EM, Azonobi I, Grant A, Craig Hooper W. Sickle cell disease in pregnancy: Maternal complications in a Medicaid-enrolled population. *Matern Child Health J*. 2013;17(2):1-15. doi: 10.1007/s10995-012-1216-3.
- Muganyizi PS, Kidanto H. Sickle cell disease in pregnancy: Trend and pregnancy outcomes at a tertiary hospital in Tanzania. *PLoS One*. 2013;8(2):e56541. doi:10.1371/journal.pone.0056541.
- Okusanya BO, Oladapo OT. Prophylactic versus selective blood transfusion for sickle cell disease in pregnancy. *Cochrane Database Syst Rev*. 2013;3(12). doi:10.1002/14651858.CD010378.pub2.
- Resende Cardoso PS, Lopes Pessoa de Aguiar RA, Viana MB. Clinical complications in pregnant women with sickle cell disease: Prospective study of factors predicting maternal death or near miss. *Rev Bras Hematol Hemoter*. 2014;36(4):256-263. doi: 10.1016/j.bjhh.2014.05.007.
- Serjeant GR. The natural history of sickle cell disease. *Cold Spring Harb Perspect Med*. 2013;3(10):1-11. doi: 10.1101/cshperspect.a011783.
- Silva-Pinto AC, de Oliveira Domingues Ladeira S, Brunetta DM, De Santis GC, de Lucena Angulo I, Covas DT. Sickle cell disease and pregnancy: Analysis of 34 patients followed at the Regional Blood Center of Ribeirao Preto, Brazil. *Rev Bras Hematol Hemoter*. 2014;36(5):329-333. doi: 10.1016/j.bjhh.2014.07.002.
- Wilson NO, Ceesay FK, Hibbert JM, Driss A, Obed SA, Adjei AA, Gyasi RK, Anderson WA, Stiles JK. Pregnancy outcomes among patients with sickle cell disease at Korle-Bu Teaching Hospital, Accra, Ghana: Retrospective cohort study. *Am J Trop Med Hyg*. 2012;86(6):936-942. doi: 10.4269/ajtmh.2012.11-0625.