Difference Between Sickle Cell SS and SC

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Key Difference – Sickle Cell SS vs SC

Sickle cell anemia, more commonly referred to Sickle Cell Disease (SCD), is a genetic disease condition which alters the typical shape of the red blood cells (RBC) into a sickle shape, which disrupts the normal functioning of the RBCs. In the context of genetics, a person who is suffering from SCD has inherited two copies of the abnormal hemoglobin gene, one from each parent. The hemoglobin gene is located on chromosome 11. Depending on the type of gene mutation that occurs in chromosome 11, SCD can be of many different sub-types. SCD is considered as an autosomal recessive condition. The individuals with sickle cell trait (AS) inherit two different types of hemoglobin genes; one gene for normal hemoglobin (A) and the other gene for sickle hemoglobin (S). Therefore the symptoms of SCD (SS) are developed only if the person has inherited two copies of the sickle hemoglobin gene (S), one from each parent. But if a person inherits only a single copy the abnormal gene (S), the person is referred to as a carrier for the disease which has sickle cell trait (AS). Anemia is the most prominent symptom for SCD. Sickle cell anemia (SS) and Sickle hemoglobic C disease (SC) are two types of SCD that occurs in an offspring of two parents with abnormal hemoglobin traits. **In sickle cell SS the person inherits two sickle hemoglobin (S) genes from parents, one from each parent** while **in sickle cell SC, the individual inherits Hemoglobin C gene from one parent and hemoglobin S gene (sickle hemoglobin gene) from the other**. This is the key difference between Sickle cell SS and Sickle cell SC. Both SS and SC disease conditions develop similar symptoms, but sickle cell SC develops less severe anemia.

What is Sickle Cell SS?

In the context of SCD, Sickle cell SS or hemoglobin SS disease is the most common type which has the potential to create severe complications in the living system. It is an autosomal recessive disease condition. A person develops sickle cell SS condition by the inheritance of two copies of sickle hemoglobin (S) gene, one from each parent.

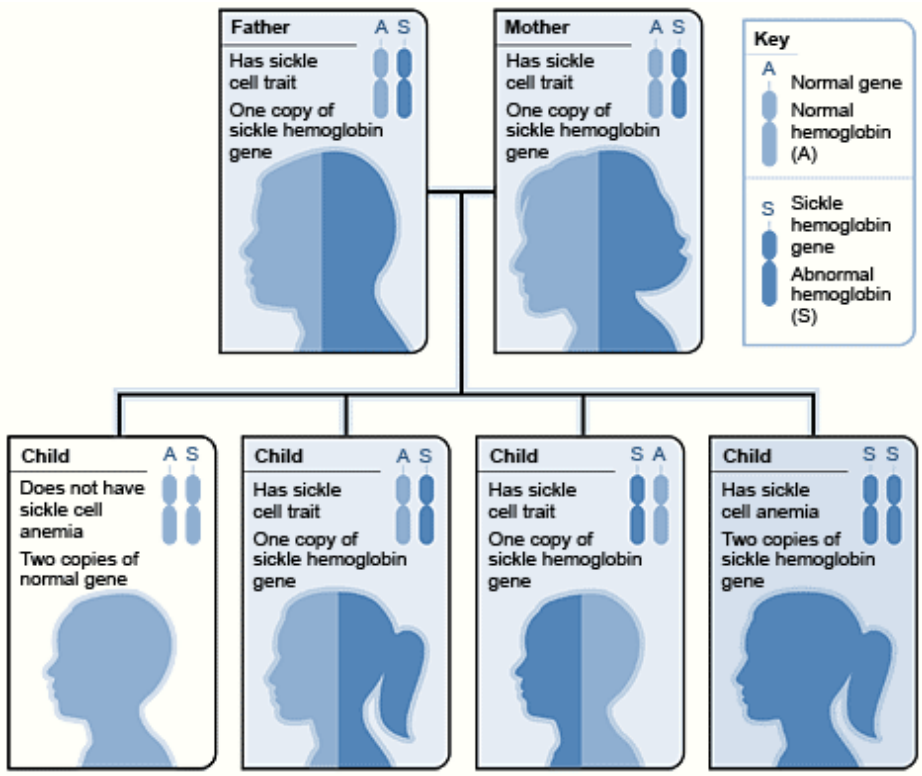

Figure 01: Sickle cell SS Disease Inheritance

Severe anemic conditions including low levels of hemoglobin are the most common symptoms of sickle cell SS. In sickle cell SS, the typical disc shape of the RBC is changed into a sickle shape; this deformation of RBCs disrupts its primary functions. Other symptoms of Sickle cell SS include fatigue, repeated infections, occurrence of periodic pains and internal organ damage. Iron supplements are not considered to be effective in increasing the levels of hemoglobin present in the blood.

What is Sickle Cell SC?

Sickle cell SC is considered to be the second most common disease condition with regard to SCD. It is developed with the inheritance of hemoglobin C gene from one parent along with a sickle hemoglobin gene (S) from the other. Anemia is the most prominent symptom in sickle cell SC, but it is less severe than in sickle cell SS. Hemoglobin C gene doesn't polymerize as rapidly as sickle hemoglobin (S). Therefore it results in the formation of few sickle cells. The symptoms of sickle cell SC is similar to that of sickle cell SS. In sickle cell SC, the individuals develop significant retinopathy conditions and bone necrosis. Jaundice may occur occasionally as a symptom. The occurrence of hemoglobin C gene is less than that of Hemoglobin A gene in sickle cell SC. This disease conditions can cause enlargement of the spleen as well.

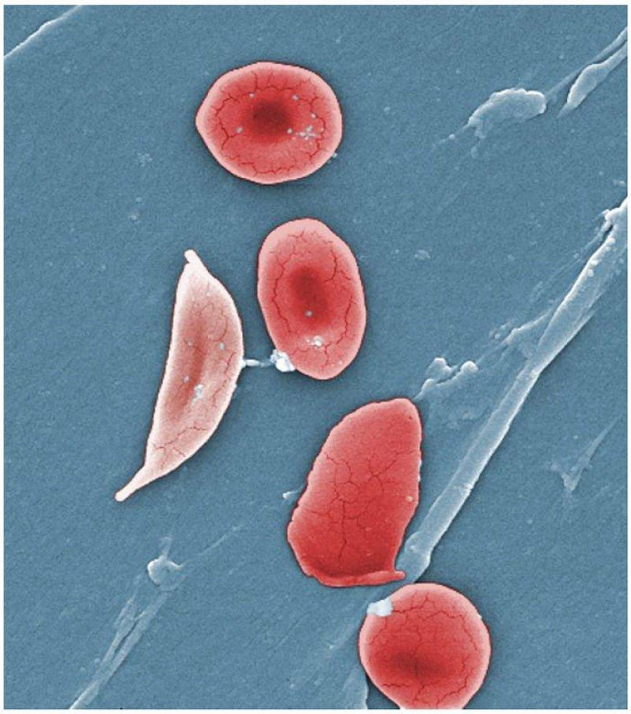

Figure 02: Sickle Cell

What are the similarities between Sickle Cell SS and SC?

- Both share similar symptoms of SCD including anemic condition.

What is the difference between Sickle Cell SS and SC?

Sickle Cell SS vs SC	
Sickle cell SS is a type of sickle cell disease which occurs due to the inheritance of two sickle hemoglobin (S) genes; one from each parent.	Sickle cell SC is a type of sickle cell disease which occurs due to the inheritance of one Haemoglobin C gene and one sickle hemoglobin (S) gene from parents.
Anemia	
Sickle cell SS develops severe anemic conditions.	The anemic conditions developed by Sickle cell SC is comparatively less severe to that of sickle cell SS.

Summary – Sickle Cell SS vs SC

Sickle cell disease is a genetic disease that disrupts the typical shape of the RBC and affects the normal functioning of the cell. Depending on the type of mutation, SCD can be categorized into many different types. It is an autosomal recessive disease condition. There are two types of SCD: Sickle cell SS and

Sickle cell SC. Sickle cell SS is a type of sickle cell disease which occurs due to the inheritance of two sickle hemoglobin (S) genes, one from each parent. Sickle cell SC is a type of sickle cell disease which occurs due to the inheritance of one hemoglobin C gene and one sickle hemoglobin (S) gene from parents. Both disease conditions develop similar symptoms although sickle cell SS anemic condition is more severe when compared to sickle cell SC. This is the difference between sickle cell SS and sickle cell SC. If a person receives only one sickle hemoglobin gene (S) and a normal hemoglobin gene (A), that person is referred to as carrier to the disease.

References:

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2. "1911 Sickle Cells" By OpenStax College – Anatomy & Physiology, Connexions Web site. Available here, Jun 19, 2013. (CC BY 3.0) via Commons Wikimedia

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