Strength of association of sickle cell trait with specific disease processes

Red blood cell

HbA

Normal hemoglobin β chain

1. Valine
2. Histidine
3. Leucine
4. Threonine
5. Proline
6. Glutamic acid
7. Glutamic acid

βGlu6Val

HbS

Sickle cell hemoglobin β chain

Valine
Histidine
Leucine
Threonine
Proline
Valine
Glutamic acid

Sickle cell disease: an autosomal recessive disorder

Sickle cell trait - Strength of association

Strong
- Chronic kidney disease
- Proteinuria
- Venous thromboembolism
- Pulmonary embolism
- Hyposthenuria
- Renal medullary carcinoma

Moderate
- Exertional rhabdomyolysis
- Hematuria
- Renal papillary necrosis

Weak
- Exertion-related sudden death
- End-stage renal disease
- Splenic infarction
- Pregnancy complications
- Acute chest syndrome
- Acute pain crisis
- Retinopathy
- Traumatic hyphema

Null
- Deep vein thrombosis
- Low pediatric weight and height
- Heart failure cardiomyopathy
- Stroke

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