

Screening College Athletes for Sickle Cell Trait

New NCAA Requirements

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Issue of Exertional Sickling in SCT (Sickle Cell Trait)

- 21 athletes collapsed and died past 10 y
- Complications from Sickle Cell Trait with strenuous exertion
 - 1 – Splenic infarction
 - 2 – Hematuria
 - 3 – Rhabdomyolysis
- Aggravating factors:
 - 1 – Heat
 - 2 – Dehydration
 - 3 – Altitude
 - 4 – Asthma
 - 5 – Illness

Research on Exertional Sickling with Sickle Cell Trait

- Early studies in military recruits
- High altitude sports participation
- Case studies from forensic medicine
- Exercise physiology studies

Pathophysiology of Sickling in SCT Athletes

- Low oxygen causes change Hgb shape
- Sickled rbc's travel in microcirculation – obstruct blood flow
- Blockage of vessels starves tissues of blood and oxygen
- Large muscles become ischemic - rhabdomyolysis
- Setting for Lactic Acidosis

Road to Rhabdomyolysis

Low oxygen causes change Hgb shape

Sickled rbc's travel in micro-circulation – 'sticky', 'log jam'

Blockage of vessels starves tissues of blood and oxygen

Large muscles become ischemic

Muscle breakdown (rhabdomyolysis) and lactic acidosis

Athlete collapse: death can result from renal failure and acidosis

Sickling vs. Heat Cramps

- Symptoms abrupt onset
 - Pain milder
 - Athletes slump to ground – “weak and wobbly”
 - Lie still, legs and back hurt, general malaise
 - Mild case, respond 10 – 15 minutes treatment
- Prodrome with twitches and twinges
 - Excruciating pain of “locked-up” muscles
 - Athletes hobble off - muscles not work
 - Cry in pain, muscles ‘rock hard’
 - 1-2 hours of treatment before improvement

NCAA Recommendations

- 1974: Univ. Colo. player died complications SCT– NCAA adds info to handbook
- 2008: Strong statement about risks related to SCT after 2006 death Rice U. football player – Dale Lloyd II
- 2010: April this year NCAA voted require athletes submit test, get test or sign declination
- Controversies about recent ruling

Response from colleges and universities

- NCAA survey: 2006 survey of 92 top level football programs – 21% required all screened; 64% had some sort of policy
- Conversations on list serve in response to new NCAA rule – many schools seek to learn from colleagues
- Screening protocols
- Testing methodologies
- Declination forms

Questions for discussion

- ?Concern related to potential for discrimination against athletes who test positive for SCT?
- ?Responsible for genetic counseling with testing?
- ?Adjust training regimen/climate for all college athletes?
- ?Who are our audiences for educating about this issue?