

Testing For Athletes At Risk

Discovery by OU's head athletics trainer and a couple of team physicians of a common misdiagnosis has resulted in a national alert that can save lives of those with a hidden trait.

By Jay C. Upchurch

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Football is a game fraught with physical ferocity and violent collisions, often times so extreme that post-game training rooms can resemble triage stations. Injuries are such an inevitable part of the sport that rules are regularly examined and altered in an attempt to enhance the safety of every athlete involved.

Safety is a focal point at basically every level of the game. That is especially true where college football and its student-athletes are concerned. The NCAA for years has striven to implement rules initiatives to help create a safer environment for its on-field participants.

Equipment has improved dramatically as the sport has evolved, and measures—involving tackling and blocking methods—have been taken to reduce the overall risk of injuries, such as concussions.

For the past 14 years, representatives from the University of Oklahoma have played an instrumental role in bringing another dangerous—and potentially deadly—issue to the forefront. While sickle cell trait, a genetic blood disorder, is not classified as a sports-specific ailment, it has been linked to the deaths of eight college football players over the past decade.



Scott Anderson is a man on a mission to promote testing of athletes for sickle cell trait.

Exertional sickling, commonly misdiagnosed as heat illness, is the biggest concern for those with the sickle cell trait. It is most evident during extended periods of intense physical activity and results in round red blood cells turning crescent shaped, which can potentially clog blood vessels and block the flow of oxygen to various vital organs.

If not diagnosed properly, it can prove fatal.

SCT occurs in one out of every 12 African-Americans tested in the general population and can be found at that same 8 percent rate in collegiate student-athletes.

Scott Anderson, OU's head athletics trainer, has led what amounts to a campaign to inform and educate the sports medicine community on the dangers of SCT. Along with former OU team internist, Dr. E. Randy Eichner, and current team physician, Dr. Brock Schnebel, Anderson has studied the cause and effects of the disorder and worked diligently to raise awareness.

"The group at Oklahoma, led by Scott Anderson and Dr. Eichner, has done a great job of bringing SCT the attention it needs," says Ron Courson, director of sports medicine at the University of Georgia. "Scott has taken a great leadership role on this issue, and I don't think you [can] say enough about the impact he's had getting the message out. He's definitely saved some lives."

Anderson may be the face and the voice of the OU contingent—having become one of the leading spokespersons on SCT nationally—but he is quick to credit both Eichner and Schnebel for the expertise they bring to the "partnership" formed in 1996—and for the unconditional support they have received from the University over the years.

“The importance of getting Dr. Eichner involved, with his knowledge and insights, is immeasurable. He looked at several cases of heat illness I was reviewing and was able to determine which ones were actually heat related and a couple that were sickling,” says Anderson. “He shared the difference, and that was a real revelation to me at that point [1996].”

That “revelation” has benefited scores of athletes over time, but possibly no one more than former OU football player Jarraill Jackson, who credits Anderson and company with potentially saving his life.

Jackson was hospitalized after suffering from heat illness-type symptoms—severe cramping and back spasms—during an early-season practice in 1996. Initially, Anderson assumed Jackson’s condition was heat stress-related and proceeded to prescribe the usual treatment, which included plenty of rest and additional fluids. But when the Sooner wide receiver showed few signs of improvement, he was taken to the local hospital for further tests.

“After some tests, the doctors told us that Jarraill had sickle cell trait. But they didn’t make the connection because even they didn’t recognize the syndrome of exertional sickling,” says Anderson.

Meanwhile, Jackson was not sure what was going on, other than the fact his body was locked up with cramps, and he was worried about his immediate future. Little did he know, his life was, to some degree, hanging in the balance.

“I was scared because I didn’t know what was going on. I guess it’s the fear of the unknown, especially when you are dealing with your health,” says Jackson, currently an assistant football coach at Dartmouth College. “But I give a lot of credit to Scott and his staff. They monitored me and made sure they covered all of their bases and that I was doing all right. They kept looking for what was wrong with me.”

Jackson sat out six weeks in recovery before finally returning to the team. In the meantime, Anderson consulted with Eichner who determined Jackson’s problems were a direct result of sickling.

“We were fortunate in Jarraill’s case. We [had] made the assumption we were dealing with exertional heat illness and managed it accordingly,” says Anderson. “Others have handled similar cases in the same manner only with catastrophic outcomes because it proved to be exertional sickling instead.”

Good fortune may have played a role in the Jackson case, but Eichner points to Anderson’s unrelenting conviction for getting to the bottom of the mystery.

“Scott was savvy enough to know this was not a routine problem—not a heat problem, not an orthopedic problem,” says Eichner. “We concluded (Jarraill’s) muscle problems were from exertional sickling, from his sickle cell trait.”

That diagnosis opened the door for what would become a quest of sorts for Anderson and Eichner, as they realized the importance of mass screening for SCT, as well as the need to educate people about its effects.

“We decided to screen for SCT and introduce practical precautions to enable SCT athletes to thrive. We studied other cases around the country and began to spread the word,” says Eichner. “Things grew from there, with Scott leading the way.”

Anderson decided to use the stage OU athletics provides to go out and share the information concerning SCT with the sports community.



Former and current team physicians Dr. E. Randy Eichner, left, and Dr. Brock Schnebel are a vital part of Anderson’s campaign to raise awareness of misdiagnosing sickle cell trait.

“We felt the key was for all to become educated—the athlete, the coach, the strength coach, the athletic trainer and team physicians—and to create an environment of tailored precaution providing an expanded margin of safety for the athlete with SCT,” says Anderson. “As the athlete senses symptoms, they can be reported, the athlete withdrawn from activity with opportunity for rest and recovery, and assessment and treatment, as warranted.”

But his message was met with some opposition.

“In medicine, there is a concept of evidence basis. It’s not about what you believe or think—you need to have some evidence to back it up,” says Anderson. “Here we were talking about the dangers of SCT, but there were plenty of doubters. Part of their reasoning was if this condition is as serious as we are saying it is, then surely the playgrounds and athletic fields around the country would be littered with dead athletes with sickle cell trait. Since that was not happening, it must be something else.”

Or was it?

Since 2001, 21 NCAA football players have died as a result of non-traumatic football injuries. Sixteen of those deaths occurred during conditioning exercises, while the others happened on either the first or second day of preseason practice. Exertional sickling was discovered in eight of those cases.

“SCT has been the leading cause of death in NCAA football programs over the last decade. Our goal has always been to get the issue the attention it deserves,” says Schnebel. “Scott has been out in front of this issue for a while.”

Anderson and his staff have identified 20 OU football players with SCT over the last 10 years, including prominent names like Jackson, Curtis Lofton, Ronnell Lewis, Pryce Macon and Brian Simmons.

“In high school, I had a severe problem with cramping up at practice,” says Lofton, an All-American linebacker in 2007. “I went to doctors, but no one could figure out what was wrong with me. So when I got to OU, I didn’t even know what sickle cell trait was. But they tested me, and the first thing Scott and his staff did was start the education process, making sure I knew everything about it and how to deal with it.”

Macon, a senior defensive end from Corpus Christi, Texas, agrees. “There is a lot of trust involved on both sides, especially believing in what Scott Anderson and those guys tell you to do,” he says. “It involves knowing your body and making sure you take all the proper precautions, like getting your fluids in, eating the right things and monitoring yourself along the way. Basically, you have to be smart in everything you do on the field and during workouts.”



With football players susceptible to a wide variety of unanticipated injuries, it is vital for team physicians and trainers to be aware of conditions that can be controlled with correct diagnosis, precautions like fluid intake and proper diet, and precise monitoring along the way.

For years, Team Anderson campaigned to get mandatory SCT screening implemented by the NCAA institutions. But it was not until 2007 that a task force sponsored by the National Athletic Trainers Association and co-chaired by Anderson and Eichner provided a consensus statement designed to further raise awareness and examine the danger of sickle cell trait in athletes, thus paving the way for a formal recommendation by the NCAA for testing.

“That whole deal was a great opportunity to bring all of the various disciplines of the medical community to the

same table, have everyone in the room together to see and hear the same information, and then have the proper discussions,” says Anderson, who is presently the president of the College Athletic Trainers Society.

“It was also an opportunity to put the issue out there in a formal manner, to take a step forward in establishing some standards in terms of screening, management and precautions. The consensus statement, which was written largely by Eichner, also came out of that, which is significant.”

While the NCAA stopped short in 2007 of requiring mandatory SCT screening, Anderson remains a regular on the guest speaker circuit for sports medicine, and his fervent message seems to be resonating with more and more of the athletics programs across the country.

“We take every opportunity we get to do some education because it’s a topic that is being discussed and looked at in a way it hasn’t been before. There is a newness to it and helping people understand it and educate them on the issue is important,” says Anderson.

Anderson recently set up a vital SCT registry at OU, and despite the fact Eichner retired to California earlier this year, he and Anderson communicate regularly, especially when the topic is sickle cell trait.

“Dr. Eichner, Dr. Schnebel and Scott have been on the cutting edge of this issue for many years,” says OU Director of Athletics Joe Castiglione. “They’ve provided a great service by sharing critical information and helping educate people along the way. It’s something we feel the University can be proud of.”

Sickle Cell Trait vs. Sickle Cell Anemia

Sickle cell trait (SCT), discussed in this article, occurs when the red blood cell has one gene for sickle cell and one normal gene (hemoglobin genotype AS). Sickle cell anemia is when the red blood cell has two sickle cell genes (hemoglobin genotype SS) and normal hemoglobin (AA). Unlike sickle cell anemia, a disease that substantially shortens the carrier’s life expectancy, sickle cell trait is a condition consistent with a normal, healthy lifespan. Understanding SCT and implementing tailored precautions is paramount to successfully managing the blood disorder.

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