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Sickle Cell Pain May Be From Damaged Tissues or Nerves

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(PhysOrg.com) -- Researchers at the University of Illinois at Chicago have discovered the pain caused by sickle cell disease may not occur solely from damaged tissues, but also from injured nerves. The research is published in the *Journal of the National Medical Association*.

Sickle cell disease is a hereditary disorder where red blood cells change from round to a sickle shape. It predominantly afflicts African Americans, Hispanics and people from the Mediterranean region.

The sickle-shaped cells are stiff and sticky, and tend to get stuck in blood vessels. When they become trapped, blood flow is blocked to the limbs and organs, causing pain, serious infections and organ damage, especially in the lungs, kidneys, spleen and brain. Some patients survive into their 40s, while others do not live beyond infancy or early childhood.

In the new study, 145 adult outpatients at UIC's Sickle Cell Center used a pen-tablet computer to record the locations, severity and nature of their pain -- the most prevalent symptom of the disease.

Patients gave their current, least and worst pain a number value from 0 (no pain) to 10 and compared it to their "worst toothache, headache and stomach-ache," said Diana Wilkie, professor and Harriet H. Werley Endowed Chair for Nursing Research and lead researcher on the study.

Along with the numerical values, patients also described their pain by

choosing from a list of 78 words. The most common descriptions of nerve pain were aching and stabbing; the most common for tissue pain were pounding and sharp.

"I can't imagine living with that pain year after year after year," Wilkie said. "The pain significantly reduces their quality of life."

Nearly half of the patients reported their pain was caused by the disease. Other patients said their hurting was caused by the weather, stress, and other or unknown causes, Wilkie said. They also reported pain in multiple locations. The upper back and left arm were the most common body areas noted. Other areas included the head, right arm, chest, abdomen, lower back, left leg and right leg, she said.

Only 51 of the 145 patients said they were pain-free. Seventeen percent of the sample reported mild pain, 27 percent said their pain was moderate, and 19 percent reported severe pain.

Participants were also asked about their misconceptions and barriers of pain management. Currently there is no cure for sickle cell disease; treatment depends on the patient's symptoms.

Hydroxyurea is the only FDA-approved medication for the disease, but other options include opioids and anti-inflammatory medications such as aspirin and ibuprofen, said Dr. Robert Molokie, assistant professor and medical director of the UIC Adult Sickle Cell Center program and a co-researcher on the study.

The potential to become addicted to pain medications was the primary concern of the participants. Opioids are considered safe, but many patients were reluctant to use them because of the potential for addiction or side-effects of nausea and constipation.

"The opioid drugs are helpful for many patients," Wilkie said. "The obstacles for patients with sickle cell disease to use opioids are greater than outpatients living with cancer. Their pain is severe and continuous, persisting beyond the typical painful episodes commonly associated with emergency room visits and hospitalizations."

Other authors on the report are Maria Suarez, Young Ok Kim and Zhongsheng Zhao of UIC's department of biobehavioral health science; Z. Jim Wang of UIC's department of biopharmaceutical sciences; and Dr. Yogen Saunthararajah of the Cleveland Clinic.

Provided by University of Illinois at Chicago

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