

Stress, fear of pain may be cause of painful sickle cell episodes

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Mental stress and the anticipation of pain may cause blood vessels to narrow and trigger episodes of severe pain (vaso-occlusive crisis, or VOC) in sickle cell disease (SCD). A team of researchers from California will present their findings today at the American Physiological Society's Physiological and Pathophysiological Consequences of Sickle Cell Disease conference in Washington, D.C.

SCD is a lifelong genetic condition in which red blood cells (RBC) form in an abnormal crescent (sickle) shape. Sickled RBCs can get caught in the [blood vessels](#), leading to reduced blood flow and [severe pain](#). Emotional stress is a known trigger of VOC, but the reasons for the association have been unclear.

The researchers studied people with SCD and healthy controls while they performed mentally stressful tasks. The volunteers were also told they would be experiencing pain during the trial to elicit a natural fear anticipation response. However, the research team did not expose the participants to pain at any point.

The research team found that, when exposed to stress and anticipating pain, both groups showed areas of decreased blood flow due to narrowing of the blood vessels (vasoconstriction). Although all participants experienced the same physiological response, "the consequences of decreased blood flow can be quite different [for people with SCD] because of the resultant entrapment of sickle cells in the microvasculature," which are very small blood vessels such as capillaries,

explained Payal Shah, MS, CCRP, first author of the study.

Provided by American Physiological Society

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