Trending Science: Scientists discover new pain organ in skin

Researchers have found a new organ under the skin that senses pain.

TRENDING SCIENCE

Science believes that the intense sharp pain we feel when we jab ourselves on sharp objects is detected by exposed nerves in the skin. A radical study in the journal 'Science' reveals that this pain might actually be sensed by a previously unknown organ in mice.

The research team first identified the new organ in mice and then tested its functionality on the rodents. This simple sensory organ is comprised of a network of cells called glial cells that surround and support the body's nerve cells. These glial cells form a mesh-like structure between the skin's outer and inner layers, with protrusions that reach up into the skin's outer layer. This organ responds to mechanical pain such as pricks, pressure and burning.

New organ plays a painful role

"We have been thinking for probably a hundred years that pain is started from nerves in the skin," molecular neurobiologist at Sweden's Karolinska Institute and study co-author Prof. Patrik Ernfors told 'National Geographic'. "But what we show now is that pain can also be started in these glial cells."

The study's results alter the way the science community considers how pain starts and progresses. The team hasn't verified yet that the organ exists in humans. Prof. Ernfors said the possibility is high: "Considering that all other previously known sensory organs in [mice] also exist in humans, it is possible if not likely that this sensory organ also is present in our skin."

Speaking to the British newspaper 'The Guardian', he added: "The major question for us now is whether these cells are actually the cause for certain kinds of chronic pain disorders."

An important piece of the pain puzzle

The findings come as a surprise to the scientists because there has been a long-held belief that the endings of nerve cells in the epidermis (outer skin layer) are bare or unwrapped. "In the pain field, we talk about free nerve endings that are responsible for pain sensation," explained Prof. Ernfors. "But actually they are not free."

The discovery could lay the groundwork for more effective painkillers. Almost one in five people experience constant pain, and a huge amount of money and effort is devoted to uncovering painkilling drugs. According to Prof. Ernfors, pain disorders affect about 7-10 % of the overall population in Europe. The research could also lead to a better understanding of how and why chronic pain occurs.
"Our study shows that sensitivity to pain does not occur only in the skin's nerve fibres, but also in this recently-discovered pain-sensitive organ. The discovery changes our understanding of the cellular mechanisms of physical sensation and it may be of significance in the understanding of chronic pain," concluded Prof. Ernfors in a Karolinska Institute press release.