Stimulating brain calms panic in rats

Discovery could lead to human treatment

By Kathleen Fackelmann
USA TODAY

Researchers report finding a way to short-circuit feelings of panic in rats, according to a study out today. If they can do the same for humans, the discovery may lead to better therapies for anxiety disorders that have been running rampant after the sniper shootings and 9/11 terrorist attacks.

In any given year, about 5 million people in the USA will suffer from post-traumatic stress disorder, a psychiatric condition triggered by living through or witnessing a traumatic event. Some experts feel people can suffer PTSD symptoms after repeatedly watching traumatic events on television. People with PTSD suffer flashbacks, nightmares and feelings of terror — long after the danger has vanished.

Gregory Quirk and Mohammed Milad of the Ponce School of Medicine in Puerto Rico wanted to find the brain region that quells that panic.

The rats in this study got a mild electrical shock each time they heard a 30-second sound. The rats quickly learned to associate the tone with the shock and would freeze each time they heard the noise. Researchers later sounded the tone again but didn't shock the rats. The rats soon learned not to be afraid.

In today's *Nature*, the researchers discovered that nerve cells in the prefrontal cortex send out that all-clear message of safety.

The researchers believe those brain cells fire when there's no danger and block or interrupt another signal — this one coming from another region of the brain responsible for feelings of terror.

The researchers wondered if they could artificially induce a feeling of calm in rats. The group of rats in this part of the study had always gotten a shock after hearing the tone —and always froze in fear.

But when the team stimulated the prefrontal cortex with a mild electrical current they could trick rats into not feeling afraid when the tone sounded. When stimulating the prefrontal cortex, the mice acted normally, Quirk says.

Those findings hold out the hope that researchers will be able to develop new therapies for PTSD and other potentially devastating anxiety disorders, says David Vlahov, a PTSD researcher at the New York Academy of Medicine.

Vlahov's research suggested that 450,000 people living in the New York City region suffered from PTSD in the months following 9/11. Some of those people are still in the grip of that terror, he says.

Quirk wonders if an experimental technique that stimulates the brain might help interrupt the cycle of fear in people with PTSD. But he says that theory will take years to check out.