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**Destroying Myths & Discovering Cold Facts**
with The Force Science Research Center

Old drugs get new uses in fighting critical-incident trauma, researchers say

In recent years, much of the focus for treating post-traumatic stress disorder has centered on traditional “talk therapy” and newer abatement techniques like EMDR (Eye Movement Desensitization and Reprocessing). Now the latest research seems to be expanding an emerging frontier that involves unexpected mind-impacting drugs.

Several physicians who specialize in pain management, for example, are reporting success in treating PTSD with injections of a local anesthetic called bupivacaine, more commonly used as an epidural anesthetic during childbirth.

This treatment, called a “stellate ganglion block” (SGB), has traditionally been used for decades to relieve arm and facial pain. Injections are made next to a collection of nerves in the neck during a procedure that usually takes about 10 minutes.

According to functional MRI readings, the drug, in addition to relieving physical pain, also affects the part of the brain that is active during fear and other traumatic emotions, causing changes that quickly and significantly relieve anxiety, according to Dr. Eugene Lipov, a Chicago-area anesthesiologist and researcher who has pioneered this treatment for PTSD.

“We can see and measure the physiologic changes that occur,” Lipov explains. “These MRIs are telling us that the cause of PTSD is physical in nature, and not simply a psychological condition.”

He believes that trauma “leads to an increase in nerve growth”—a “sprouting of sympathetic nerves”—that in turn causes increased production of adrenaline, resulting in increased anxiety. “A block placed next to the stellate ganglion leads to a decrease in nerve growth factor and a reversal of PTSD symptoms,” he says.

Among patients he has treated successfully, he reports, is a young woman who was accosted outside a movie theater by 2 would-be robbers who tried to force her and a companion into a car at gunpoint. A passing squad car scared them off and the woman was not physically harmed. She was, however, left with persistent “extreme anxiety,” panic attacks, and irrational, “paralyzing” fear. Diagnosed with PTSD, she gained 60 pounds, at times became “house-trapped,” and eventually flunked out of college.

Injections from Lipov, she says, relieved her PTSD symptoms and restored her sense of control over her life. She is now confidently enrolled in nursing school for the fall.

Dr. Paul Lynch, co-founder of Arizona Pain Specialists in the Phoenix area, says his use of the SGB procedure on PTSD sufferers has “an effect similar to antidepressants. It’s like rebooting the brain.” And Dr. Sean Mulvaney of Walter Reed Army Medical Center in Maryland reports that “unlike conventional treatments for PTSD, SGB appears to provide results almost immediately.”

He cites 2 patients: one a 36-year-old male on active duty in Iraq whose symptoms began after the battle of Fallujah, the other, a 46-year-old military retiree, whose emotional troubles dated back nearly 2 decades to the first Gulf War. Both had reacted negatively to psychiatric medications but “experienced immediate, significant, and durable relief” from the SGB procedure.

Federal funding is now being sought for further investigation. Meanwhile, Dr. Lipov is seeking Iraq and Afghanistan veterans who are suffering from PTSD to participate in a study he is getting underway. Interested parties can call 847-608-6620.

Elsewhere, Dr. Alain Brunet, associate professor of psychiatry at McGill University in Montreal, who has been involved in PTSD research for more than 15 years, is concentrating now on the effects of an old hypertension medication, propranolol, on trauma disorder.

With Dr. Roger Pitman of Harvard Medical School, Brunet treated a man who developed PTSD symptoms after being smashed on the head with a gun butt during a life-threatening bank robbery. As his symptoms worsened, this victim abandoned hobbies, broke up with a romantic partner, and "felt unsafe whenever he went outside" his house.

The man was told to write a detailed account of the incident. Then during a treatment session, he would re-read the narrative after being given propranolol, which can reduce common symptoms of fear, including a speeded-up heart rate and profuse sweating.

By the fifth treatment, Brunet says, the subject reported feeling "remote" when reading the script rather than highly anxious, emotional, and fearful. Now, 2 years later, he says he remembers the robbery experience but the symptoms of fear and trauma associated with it have not returned.

According to a report in the Wall Street Journal by science writer Shirley Wang, the propranolol therapy is tied to the way current researchers think memories are stored in the brain. Many scientists believe that "memories are stored like individual files on a shelf," Wang writes. "[E]ach time they are brought down for viewing, they can be altered before being put back into storage. Altering a memory during the time it is off the shelf can create an updated memory that can be saved in place of the old one."

Propranolol treatment "involves thinking about one's trauma under the influence of the drug," explains a report from McGill University. "Propranolol works by partly blocking the emotional component of the trauma memory from being saved again into long-term memory storage while leaving other components of the memory intact."

Brunet, too, has additional research in progress.

And in other news, here are two research reports of interest to officers concerned about health and fitness:

1. A study from the University of Chicago reveals that sleep deprivation may inhibit your ability to lose weight, even if you exercise and eat well.

The research shows that restricting sleep to just 4 hours per night—a familiar phenomenon to officers who work rotating shifts and/or extra jobs—can impact even healthy young adults to the point that some develop glucose and insulin characteristics of diabetics, according to the National Sleep Foundation. Inadequate sleep appears to lower the levels of an appetite-regulating hormone in the body (leptin), inducing more eating and weight gain.

2. A study at Stanford University finds that even small amounts of social support, like having a friend phone or email you encouraging reminders, may produce "large and lasting gains" in your commitment to get more exercise.

Researchers estimate that nearly all sedentary people at one time or another have resolved to maintain exercise programs, but failed.

Seeking improvement, Stanford scientists divided 218 volunteers into 3 groups. Some participants got called every 3 weeks for a year by a health educator who asked about their compliance with their exercise goals and to cheer them on with congratulations for any exercise performed. They were asked each time how their exercise level might be boosted in the days ahead and reminded of the importance of resuming their regimen when they lapsed.

Others got calls from a computer programmed to make similar inquiries. A control group got no calls.

After 12 months, the group that received human calls had increased their exercising nearly 80% from where they started. Those with computer contact had doubled their weekly level, while the control group showed only a 28% increase from where they began.

"Social support helps prevent against relapse," explains Dr. Abby King, the professor medicine and health research and policy who conducted the study. "A light touch can have a lasting effect."

Says one of the participants: "When you have to report back on what you've done, it motivates you."

This is akin to the buddy system for adhering to a fitness program recommended by Dr. Michael Asken, a psychologist with the Pennsylvania State Police, in Force Science News Transmission #141, which can be accessed at www.forcescience.org.

About the author

The FSRC was launched in 2004 by Executive Director Bill Lewinski, PhD. - a specialist in police psychology -- to conduct unique lethal-force experiments. The non-profit FSRC, based at Minnesota State University-Mankato, uses sophisticated time-and-motion measurements to document-for the first time-critical hidden truths about the physical and mental dynamics of life-threatening events, particularly officer-involved shootings. Its startling findings profoundly impact on officer training and safety and on the public's naive perceptions. For more information, visit www.forcescience.org or e-mail info@forcescience.org. If you would benefit from receiving updates on the FSRC's findings as well as a variety of other use-of-force related articles, please visit www.forcesciencenews.com and click on the "Please sign up for our newsletter" link at the front of the site. Subscriptions are free.

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