

UT News

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****Researchers try beta blockers
for sleep terrors

DALLAS -- Sleep terrors -- those strange episodes in which child or adult alike may cry out from a deep sleep, bolt from the bed or thrash around wildly without waking -- are strange paradoxes, says a Dallas psychologist.

"The person afflicted with night terrors goes from the deepest level of sleep to a state of hyperaroused, abject terror without ever waking up," explained Dr. John Herman. Herman is clinical assistant professor of psychiatry at The University of Texas Health Science Center at Dallas and director of the new Sleep Disorders Center for Children, which opened July 14 at Children's Medical Center of Dallas. The sleep researcher also works with adults at UTHSCD's Sleep Disorders Center.

These sleep terrors, also sometimes called night terrors, come with a surge of sympathetic activity when there is a massive discharge of adrenaline from the sympathetic nervous system. No one knows why this happens, he said. The victim jumps from a state of deep non-dreaming sleep to a condition of anxiety in which he or she may be screaming in terror, thrashing about wildly or crying inconsolably -- all without apparent signs of awakening.

At that time, the person experiences physiological reactions that we associate with "fight or flight": sweating, rapid heart beat, increased blood pressure, dilation of the pupils, a slowdown of the gastrointestinal tract and constriction of blood flow. Oddly, sleep terrors are unlikely to come during REM (rapid eye movement) sleep, the stage at which a person is likely to be dreaming. Night terrors occur when a person is experiencing non-REM sleep. The brain is "awake," but the body is "asleep," that is, in a state of semi-paralysis. Little central nervous system action, which is connected with the brain and spinal cord, is taking place.

"Frequently the sufferer from sleep terrors may be inconsolable up to an hour -- especially in the case of children -- and has no memory of the event," Herman said. He is involved with research studies in sleep terrors in both children and adults with grants from Stuart Pharmaceutical Company. Participants in the children's studies range in age from three to 18, while adult subjects are from 19 to 35.

It has always been assumed that night terrors are associated with activity of the central nervous system and thus related to brain activity. However, Herman has a theory that these episodes could originate with the sympathetic nervous system. "The brain could very well be reacting in a confused manner in response to inexplicable hyperactivity that happens in response to the cardiac discharge in the body when the central nervous system wakes up and the sleeper becomes aware of these changes," he said. This discovery may lead to a feeling of panic, which may start a "feedback loop" from the brain to the heart that amplifies these panicky feelings.

Herman and his associates have been studying the possibility of using cardiac beta-blockers with severe cases. They are Dr. Howard Roffwarg, director of the UTHSCD Sleep Disorders Center and Dr. Mark Parrish, a pediatric cardiologist on the medical school faculty and the CMC staff.

The researchers are taking a cue from neurophysiologists who have theorized that some of the problems caused by night terrors may be caused by the body's releasing adrenaline-like substances that cause symptoms associated with tachycardia (rapid heartbeat). Therefore, the UTHSCD researchers are interested in seeing whether a beta-blocker (a class of drugs that inhibits the effects of adrenaline or adrenaline-like substances in the body) is effective. In fact, investigating the effect of cardiac beta-blockers on stress to assess the contribution of the sympathetic nervous system to sleep terrors may serve as a model for the study of anxiety in general, said Herman.

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Parrish said that atenolol, the beta-blocker chosen for this study with children, has minimal effects on the brain and central nervous system and few on the circulation, blood pressure and the heart. It is not sedating like a tranquilizer, and it is long-acting so it should work throughout the night. Researchers are conducting a double-blind cross-over study in which each patient participates in baseline, placebo and drug studies. In addition, parents are asked to observe their children at home and keep logs on sleep terrors. Personal anecdotal reports are being collected from adult patients.

Currently when drug intervention is considered in severe cases of night-terror episodes, drugs from a class called benzodiazepines are usually given. Benzodiazepines, which are used as minor tranquilizers, anti-convulsants, muscle relaxants and hypnotics, or sleep-inducing drugs, are among the most widely prescribed medications in the United States.

"This type of drug has a high potential for detrimental effects, and it may cause marked depressive effects, especially on a child," commented Parrish. Herman agreed that there may, indeed, be problems with tranquilizers. He said that tranquilizers tend to "knock out deep-sleep waves" and often cause a "hangover effect." It should also be remembered that neither of these drugs used for intervention cure the problem," Herman stressed.

Nor is there always cause for worry. "Often experiencing night terrors in which the child wakes up screaming is a normal developmental occurrence and should not be a matter of concern. These terrors are usually associated with children from 6 months to 3 or 4 years of age.

"Most children grow out of them," he said. "However, three or four episodes a night are too many. If the night terrors occur with a disturbing frequency or continue into the school years, treatment, which may start with psychotherapy and counseling, may be indicated."

He pointed out that the child with severe sleep problems is more likely to come from a home where parents or a parent is experiencing an anxiety problem. "I think anxiety has to be there as a pre-condition to the terror," he said. In such cases, psychotherapy may be indicated.

The psychologist said that studies of Viet Nam veterans with night terrors show that these sleep events are similar to the terrors experienced by children or other adults, only more severe.

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NOTE: The University of Texas Health Science Center at Dallas comprises Southwestern Medical School, Southwestern Graduate School of Biomedical Sciences and the School of Allied Health Sciences.