# Study: Brain injuries tied to trouble sleeping

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People with brain injuries may produce low amounts of melatonin, which affects their sleep, according to a study published in the May 25, 2010, print issue of *Neurology*, the medical journal of the American Academy of Neurology.

For the study, 23 people who had a severe traumatic brain injury an average of 14 months earlier and 23 healthy people of the same age spent two nights in a sleep laboratory.

"We've known that people often have problems with sleep after a brain injury, but we haven't known much about the exact causes of these problems," said study author Shantha Rajaratnam, PhD, of Monash University in Victoria, Australia.

The healthy people produced more melatonin than the people with brain injuries in the evening hours, when melatonin levels are supposed to rise to signal sleep. Melatonin is a hormone that regulates biological rhythms, including sleep.

"These results suggest that the brain injury may disrupt the brain structures that regulate sleep, including the production of melatonin," Rajaratnam said. "Future studies should examine whether taking supplemental melatonin can improve sleep in people with brain injuries."

The people with brain injuries had other differences in their sleep patterns. They spent less of their time in bed actually asleep than the healthy participants did, or a "sleep efficiency" percentage of 82 compared to 90 for the healthy group. They also spent more time awake after initially falling asleep, or an average of 62 minutes per night compared to 27 minutes for the healthy group.

In addition, the people with brain injuries spent more time in non-REM sleep, in a stage of sleep called slow-wake sleep or deep sleep. Those with brain injuries spent an average of 24 percent of their time in slow-wake sleep, compared to 20 percent of the time for healthy participants.

Those with brain injuries also had more symptoms of anxiety and depression. However, the researchers calculated the results to control for the anxiety and depression symptoms and still found differences in sleep patterns.

Provided by American Academy of Neurology