6.2.5

Narcolepsy

Watch the Video Narcolepsy Part 1

Watch the Video Narcolepsy Part 2 (Only up to 6:13)

Narcolepsy is a chronic neurological disorder that affects the brain's ability to sleep. It is characterized by daytime drowsiness and sleep attacks. The triad of symptoms for narcolepsy are excessive daytime sleepiness, sleep paralysis, and hallucinations. Other symptoms include hypersomnia (excessive sleepiness), cataplexy (sudden and uncontrollable muscle weakness), hypnagogic hallucinations (imagined sensations that occur just as a person is falling asleep), hypnopompic hallucinations (vivid dream-like experiences), and sleep paralysis (maintained consciousness with inability to move). Patients between 10 and 20 years old are most prone to development of narcolepsy.

In narcolepsy, NREM and REM sleep are disorganized. REM usually occurs after a period of NREM sleep, but in narcolepsy it often occurs at sleep onset. Characteristics of the sleep cycle including lack of muscular control and vivid dreams can occur at other times besides night time. Patients with narcolepsy can also enter REM sleep rapidly during the day. It is as though the brain cycles rapidly in and out of REM sleep without the normal cycling through deep sleep, and the circadian rhythm becomes messed up because sleep can be triggered at any time. Emotional state can be a strong trigger for a narcoleptic episode. Strong emotions (even laughter) can trigger an atonic state (temporary paralysis or sleep paralysis) called **cataplexy**. Some people with narcolepsy experience cataplexy, but not all.

The cause of narcolepsy varies between individuals and is not always known. It does appear that some people can have a genetic predisposition to develop narcolepsy. The allele variation HLA-DQB1*06:02 has a strong correlation to the development of narcolepsy. It is found in close to 90% of individuals with diagnosed narcolepsy. However, this HLA gene variation is not the only contributor to developing narcolepsy. Narcolepsy has also correlated with infections (there were many new cases reported after the H1N1 influenza epidemic of 2009), diet, some pesticides, brain injuries, tumors, and strokes. Recent evidence suggests that many cases of narcolepsy may be an autoimmune condition where some combination of genetic and environmental factors triggers the immune system to begin attacking a subgroup of neurons originating in the lateral hypothalamus. These neurons release a neuropeptide called **orexin** (also called **hypocretin**) that is projected on many areas of the brain and brainstem. Orexin has been shown to influence feeding, addictions, and other behaviors. It also has a strong effect on wakefulness. If the immune system destroys orexin secreting neurons, then proper regulation of sleep wake cycles becomes dysfunctional.

Treatment for narcolepsy includes lifestyle modifications and medication. Some lifestyle adjustments include practicing good sleep hygiene, good exercise habits, regular sunlight exposure, scheduled naps, and tight work and activity schedules. Medications tend to promote wakefulness during the day by increasing the release of excitatory neurotransmitters in the brain.