
NAMI Education Meeting**March 13, 2008****Dr. Kenneth Towbin****Children With Mood Disorders and Medications**

Dr. Towbin is Chief of Clinical Child and Adolescent Psychiatry in the Intramural Research Program at National Institute of Mental Health (NIMH). Intramural programs refer to investigations that take place on the NIMH campus. Dr. Towbin spoke about child and adolescent anxiety disorder, depression, what we know about the brain, genetic features, the course of the disability, and treatment options.

The main types of pediatric anxiety disorders are generalized anxiety disorder, separation anxiety disorder, social anxiety disorder, panic disorder, and obsessive compulsive disorder.

A review of what happens in the brain when someone becomes anxious is as follows: When a person comes upon a frightening object like a snake, the threatening event triggers a reaction. The visual cortex of the brain says "yikes it's a snake." There is a fear cascade. The muscles are ready to go, there are hormonal changes, and heart rate and blood pressure go up.

Responding to stimuli that warn of danger involves neural pathways that send information about the outside world to a part of the brain called the amygdala which in turn, determines the significance of the stimulus and triggers emotional responses like freezing, fleeing, and facial expressions. The amygdala can also cause changes in the inner workings of the body's organs and glands in response to the event. The feelings of the memory of the frightening event are stored in the amygdala.

Dr. Towbin gave an example of an experiment where a mouse in a cage is given a shock through an electric grid when a tone is sounded. The mouse paired the sound and the cage with the unpleasant stimuli of the shock. The mouse learned that the cage was a scary environment even when there was no shock being given.

A study by Pat Cohen examined individuals over a long period of time from 9 through adulthood showed that the presence of anxiety disorders in children and adolescents may be a forerunner for anxiety and depression in adults.

According to Dr. Towbin recent scientific studies have shown that there is a higher incidence of anxiety and depression in children whose parents have those disabilities. For example there is a greater likelihood that the children of parents with panic disorder will have an anxiety disorder. Children of parents who have panic disorder and depression are more prone to have behavioral inhibition (shyness).

Dr. Towbin spoke about the importance of the serotonin re-uptake system in anxiety disorders and depression. Neurotransmitters are natural chemicals in the brain that transmit nerve impulses from one neuron to another across the synapse. Once the impulse reaches the other side, it is passed along to the nucleus of the receptor cell. The neurotransmitters diffuse across the synapse and attach themselves to their specific receptors. For example, serotonin (5-HT) binds with 5-HT receptors. Re uptake is the process of re-absorption. Special proteins called transporters pump neurotransmitters from the synapse back into the axon terminal. Some people with anxiety disorders and depression may have an inefficient transporter system for bringing serotonin back into the nerve cells.

Environmental factors can influence the expression of anxiety. People can experience the same traumatic event and have different outcomes. There was a study with rhesus monkeys. Some monkey babies were raised with their mothers while others were peer raised. That is stressful for monkeys. The scientists also looked at the monkeys' serotonin uptake transport system. The environment and gene for inefficient serotonin transport system made some peer raised baby monkeys more vulnerable to stress.

Dr. Towbin talked about treatments for depression and anxiety disorders in children. A drug in a trial has to do more with children and adolescent to beat the effects of the placebo. `Prozac is marginally better than the placebo in treating children for depression. Because there was a slight risk for thoughts of suicide ideation in prozac, SSRI's (celexa, paxil, effexor, Zoloft). were not recommended for treating depression in children and adolescents.

In contrast to using SSRI's to treat depression those drugs are more effective in treating anxiety disorders in children. In one study where children took the SSRI of luvox or fluvoxamine 50% had a reduction in their symptoms. SSRI's all have the same efficacy for treating anxiety. You can choose any of them – it's like "pin the tail on the donkey". The serotonin uptake transport system is important in anxiety disorders. The causes for depression may be more complicated than those for anxiety.

It is also important to note that if a child responds to a drug for anxiety, that may have a better staying time in the body than for depression. The child may only have to stay on the drug for anxiety for 1 and ½ years. It may be some years down the line that you have to replace the drug at all.

The mechanism of the SSRI's are the same in anxiety and depression yet those drugs are more effective in treating anxiety.

Dr. Towbin talked about the importance of cognitive behavioral therapy in treating anxiety in children and adolescents. One study comparing the use of cognitive behavioral therapy (CBT) to using drugs and a placebo to treat anxiety in children showed CBT beating the drugs and placebo in a landslide!

CBT was developed on the premise that the abnormal feelings and beliefs and the maladaptive behaviors, of people with certain mental disorders could be improved by replacing them with more effective thought patterns and behaviors. For example, a child who has anxiety will find giving an oral book report more stressful than his/her peers. If the child does not give the oral report because of this fear, this feeling may extend to other activities like going to the lunchroom or parties. The feared stimulus takes on a life of its own. In CBT there is a graded exposure to what the person fears (that is safe). This therapy helps the child manage feared ideas or experiences.

CBT is effective in treating anxiety disorders in children and has no side effects. Some children won't expose themselves to fearful stimuli and for them medication might be most effective for anxiety.

CBT is also the first line treatment for children and adolescents with depression. The effectiveness of CBT versus antidepressants for treating children with depression has not been adequately assessed although one study compared placebo with fluoxetine and CBT, fluoxetine alone, and CBT alone in depressed adolescents. Combination CBT and fluoxetine produced the best therapeutic outcome.

Dr. Towbin posed the question of whether there are drugs that will facilitate the learning that goes on in CBT. There is a study of one drug called D-cycloserine. That drug is 50 years old and was originally used to treat TB. In addition to its antibiotic activity, D-cycloserine affects the central nervous system. It facilitates glutamate activity. Glutamate is the most abundant neurotransmitter in the brain. In a study of agoraphobia (dread of public or open spaces) there was more improvement in symptoms for individuals taking D-cycloserine in combination with CBT than in the other groups.

Dr. Towbin concluded that studying neurotransmitter mechanisms are important because that way we can explore new drugs. Research tells us what is safe and effective for people to use to treat biological diseases like depression and anxiety.

Notes Taken by Rochelle Banta

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