

**DR. LOUIE YU**  
**NEUROTRANSMITTERS**  
**CLINICAL**  
**APPLICATIONS**

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# CLINICAL APPLICATIONS FOR NEUROTRANSMITTERS

**ADD/ADHD or Attention Deficit Disorder is a common behavioral disorder.**

The acronym of ADD is normally used whether or not hyperactivity is present. It is estimated that between 3% and 5% of all children have ADD.

- Boys are diagnosed with ADD more often than girls, although ADD is considered to be as prevalent in girls as it is in boys.
- One theory for this is that ADD (Inattentive type) may be more prevalent in girls and is harder to diagnose than ADD with hyperactivity.
- ADD is characterized by symptoms such as hyperactivity, impulsiveness, distractibility and difficulty sustaining attention for periods of time.
- Symptoms may be different in each person with ADD. Some may have more of a problem with inability to focus, while others may have the most difficult time with impulsiveness.

Research on the brain has shown that some areas of the brain can be up to 10% smaller in individuals with ADD, however ADD does not affect intelligence.

The major symptoms of ADD include:

1. Impulsiveness
2. Inattention
3. Hyperactivity

## **Impulsiveness**

Impulsiveness is reacting rather than acting. Those with problems with impulsiveness may blurt out answers, even when inappropriate, make quick decisions without considering the consequences and find themselves spending money they don't have.

## **Inattention**

Inattention is the inability to focus on one subject for any length of time.

Those with inattention problems may find themselves going back and forth from lack of focus to hyperfocus. Some experts indicate that it is not the inability to pay attention but the inability to filter out unwanted stimulus and therefore people with ADD may constantly be paying attention to many different things at one time, rather than concentrating on a single thing.

## **Hyperactivity**

Hyperactivity is the inability to sit still. Those with hyperactivity are restless and constantly in motion. They may tap their pencil, fidget or get up and walk around.

WHAT NEUROTRANSMITTER(S) DEFICIENCIES PLAY MAJOR ROLES IN THIS DISORDER

WHAT IS THE FIRST LINE OF TREATMENT FOR THESE TYPES OF PATIENTS

## **DIETARY CHANGES:**

1. NOT WHEAT OR WHEAT BASED PRODUCTS, which include products that contain food starch and modified food starch. I.e. Bread, pastas, pastries and cookies organic or not
2. COW DAIRY PRODUCTS OR PRODUCTS THAT CONTAIN DAIRY PRODUCTS, which includes cheeses, creamers and butter. This also includes organic products.
3. NUTS AND SEEDS OF ALL KINDS, which includes soaked organic sources. THIS DOES NOT INCLUDE NUT OILS.

## **WHAT OTHER MAJOR CAUSATIVE FACTORS MUST BE TREATED WITH ADD/ADHD**

### **IRRITABLE BOWEL SYNDROME (IBS)**

- Irritable bowel syndrome (IBS) or spastic colon is a functional bowel disorder characterized by abdominal pain and changes in bowel habits which are not associated with any abnormalities seen on routine clinical testing.
- Lower abdominal pain, and bloating associated with alteration of bowel habits and abdominal discomfort relieved with defecation are the most frequent symptoms.
- The abdominal pain type is usually described in a patient as either diarrhea-predominant (IBS-D), constipation-predominant (IBS-C) or IBS with alternating stool pattern (IBS-A).

WHAT IS DISTINGUISHES THIS DISEASE FROM CHRON'S?

WHAT NEUROTRANSMITTER(S) ARE ASSOCIATED WITH IBS?

WHAT ARE THE OTHER MAJOR CAUSATIVE FACTORS RELATED TO IBS?

### **CHRONIC PAIN SYNDROMES WITH EXCESSIVE THOUGHTS**

- Arthritis
- Fibromyalgia
- Sciatica
- Inability to think clearly due to racing thoughts

WHAT NEUROTRANSMITTER(S) ARE ASSOCIATED WITH PAIN SYNDROMES AND RACING THOUGHTS.

## **REVIEW OF NEUROTRANSMITTERS AND THERE AREAS OF PRODUCTION**

### **Frontal Lobes: DOPAMINE**

- Every part of the body is connected through nerves cells with the Frontal lobe.
- The FL controls movement and response to external stimuli, such as hot, cold, touch.
- Dopamine controls the Brain's power –Voltage (V is the intensity of the brain's response to stimuli and its ability to process them). Voltage influences all the body's functions related to power such as blood pressure, metabolism and digestion.

## **Parietal Lobes: ACETYLCHOLINE**

- Acetylcholine is a component of myelin (a substance that surrounds each nerve like the plastic insulation around a wire and is responsible for the transmission of nerve impulses).
- Acetylcholine also works like a lubricant and keeps the internal structure moistened allowing energy and information to pass easily through the body.
- Acetylcholine is a major neurotransmitter for the ANS (Autonomic Nervous System).
- Acetylcholine controls memory and is responsible for the cognitive brain function.
- Acetylcholine is associated with brain speed.

## **Temporal Lobes: GABA**

- The temporal lobes are the home of memory and language function.
- Gaba helps to control Dopamine and Acetylcholine by helping to regulate the frontal and parietal lobes.
- Gaba is the major inhibitory neurotransmitter.

## **Occipital Lobes: SEROTONIN**

- The visual cortex is located in the occipital lobe.
- The occipital lobe regulates the brain's ability to rest and resynchronize.
- The sleep process and rational thinking are closely related with proper functioning of the occipital lobe.

## **PARKINSON'S DISEASE**

Parkinson's disease (also known as Parkinson disease or PD) is a degenerative disorder of the central nervous system that often impairs the sufferer's motor skills and speech.

- Movement disorder
- It is characterized by muscle rigidity, tremor, a slowing of physical movement (bradykinesia) and, in extreme cases, a loss of physical movement (akinesia).

The primary symptoms are the results of decreased stimulation of the motor cortex by the basal ganglia, normally caused by the insufficient formation and action of dopamine, which is produced in the dopanergic neurons of the brain.

- Secondary symptoms may include high level cognitive dysfunction and subtle language problems.
- PD is both chronic and progressive.

WHAT ARE THE NEUROTRANSMITTER(S) INVOLVED?

WHAT OTHER FACTORS CONTRIBUTE TO PREVENT HEALING?

## **CLINICAL DEPRESSION**

Clinical depression (also called major depressive disorder, or unipolar depression when compared to bipolar disorder) is a state of intense sadness, melancholia or despair that has advanced to the point of being disruptive to an individual's social functioning and/or activities of daily living.

## TYPES OF DEPRESSION

Depression with Melancholic Features - Melancholia is characterized by a loss of pleasure (anhedonia) in most or all activities, a failure of reactivity to pleasurable stimuli, a quality of depressed mood more pronounced than that of grief or loss, a worsening of symptoms in the morning hours, early morning waking, psychomotor retardation, anorexia (excessive weight loss, not to be confused with Anorexia Nervosa), or excessive guilt.

Depression with Atypical Features - Atypical Depression is characterized by mood reactivity (paradoxical anhedonia) and positivity, significant weight gain or increased appetite, excessive sleep or somnolence (hypersomnia), or significant social impairment as a consequence of hypersensitivity to perceived interpersonal rejection. Contrary to its name, atypical depression is the most common form of depression.

Depression with Psychotic Features - Some people with Major Depressive or Manic episode may experience psychotic features. They may be presented with hallucinations or delusions that are either mood-congruent (content coincident with depressive themes) or non-mood-congruent (content not coincident with depressive themes). It is clinically more common to encounter a delusional system as an adjunct to depression than to encounter hallucinations, whether visual or auditory.

Bipolar I Disorder - is an episodic illness in which moods may cycle between mania and depression. In the United States, Bipolar Disorder was previously called Manic Depression. This term is no longer favored by the medical community, however, even though depression plays a much stronger (in terms of disability and potential for suicide) role in the disorder. "Manic Depression" is still often used in the non-medical community.

Postpartum Depression or Post-Natal Depression is clinical depression that occurs within two years of childbirth. Owing to physical, mental and emotional exhaustion combined with sleep-deprivation, motherhood can "set women up", so to speak, for clinical depression.

Premenstrual dysphoric disorder is a pattern of recurrent depressive symptoms tied to the menstrual cycle. The premenstrual decline in brain serotonin function is strongly correlated with the concomitant worsening of self-rated cardinal mood symptoms. Of considerable clinical importance, the recent understanding of premenstrual dysphoria as depression points directly to effective treatment with Selective serotonin reuptake inhibitor (SSRI) antidepressants. Previously, disrupting ovarian cyclicity had been the only recognized treatment. A recent review of studies of a number of SRIs has revealed that they can effectively ameliorate symptoms of premenstrual dysphoria and may actually work best when taken only during the part of the menstrual cycle when dysphoric symptoms are evident.