Psychiatric Medication and Behavioral Interventions in Children with PANS

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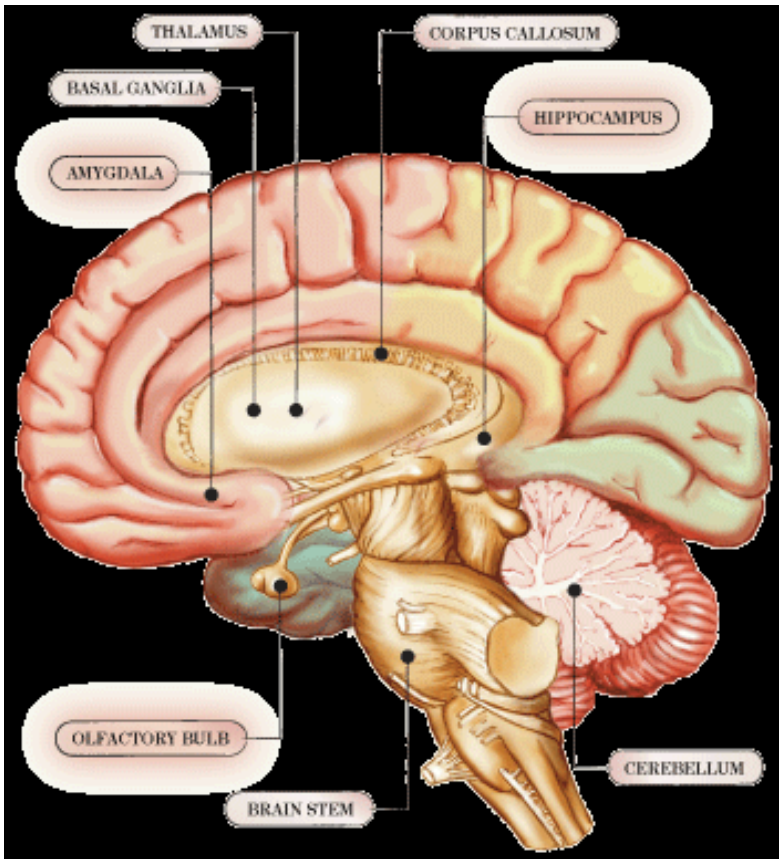
Limbic System



Explaining PANS To Your Child

- Germs (virus and bacteria): Some are considered enemies and are always around us. Our bodies have a highly developed military to keep enemies defeated.
- Marines (IgM): The marines are always prepared for a quick strike attack, patrolling everywhere

Explaining PANS

- Air Force (IgE): They dive bomb with swelling, itchy, etc. They attack only at place of exposure. Most children know of insect stings, seasonal allergies, peanut allergies, etc. as examples.
- Army (IgA): They are boots on the ground in your entire mucosal system, eyes, nose, gut, bowel, bladder.

Explaining PANS

- Navy (IgG): The Navy gets to the war slowly (4-8 weeks), floating everywhere there is fluid, including your brain. When PANS occurs the Navy has received the wrong intelligence. It was tricked by counter intelligence (spies), reporting that an area of your brain area is infected and the Navy is supposed to fight back. They keep shelling the basal ganglia!

Explaining PANS

- The Navy is now regularly sending explosive shells to your basal ganglia, causing injury and swelling.
- Point out how a mesquito bite (IgE, Air Force) looks and feels as it itches, swells, then finally goes away. The swelling will go down but as long as the Navy keeps getting the wrong intelligence, it remains confused.

Do You Know Who is Talking To You? T. Chansky

- Give PANS a name, code word, etc.
- Caller ID: PANS is calling.
- “This message you are about to hear is notoriously unreliable, distorted and out of proportion”
- Flares are important to recognize. They are not all defeating and back to square one’

Behavioral Interventions

- What are you treating?
- Anxiety, generalized and specific: separation anxiety, phobias,
- Obsessive Compulsive Disorder
- Tics
- Eating Disorders, Sensory issues, etc.
- Urinary Urgency

Anxiety Definitions

- Anxiety: a multisystem response to a perceived threat or danger.
- Emotion: is generally used for the biochemical changes and feeling state that underlie a person's internal sense of anxiety
- Affect is used to describe the person's emotional state from an observer's perspective.

Fear

- Fear: Fear is a direct, focused response to a specific event or object, and the person is consciously aware of it.
- Fear appears to be very high in PANS, the certainty of harm is more present and reacted to than in many anxiety states.

Anxiety Attack

Tamara Chansky

- What goes up must come down, strong feelings pass: starts with a big feeling, then a medium feeling, then a manageable feeling
- Common triggers: usually fatigue, poor diet, overstimulation. In PANS it is neurological.
- Your heart is pounding because you are upset, not because you have to do something quickly.
- Reasoning does not work in the heat of the moment.

Anxiety:Fight/Flight

- Physical state of hyper arousal, adrenalin rises = eyes dilate, more awake (often at bedtime), HR, BP, and breathing rates increase, high muscle tension, digestion slows, blood flow to large muscle groups (stomach ache)
- Measurements: Child Behavioral Checklist, Brief Psychiatric Rating Scale, etc. 70 evaluation tools were noted by a research article

Physical Symptoms of Anxiety

- Headache, light headed, dizziness, nausea and/or vomiting, diarrhea, numbness or tingling (esp. in fingers, feet and face), pale complexion, trembling/shaking, sweating, tightness or pain in chest/heart/neck.

Panic/Panic Attack

- Panic: To be overcome with extreme fear
- Panic Attacks: Periods of intense fear or apprehension of a sudden onset and of variable duration from minutes to hours. Panic attacks usually begin abruptly, may reach a peak within 10 minutes, but can also continue on if continually stimulated.

Fear and Panic in PANS

- A typical child/adol. with anxiety and OCD can be overwhelmed by it but they are usually able to describe and talk about it.
- A large group of child/adol. who have PANS cannot talk about or describe it in the office. They can reveal the details to their parents. They are embarrassed and shamed in front of us to talk about it. Interview parents first alone if possible.
- “The Invasion of the Body Snatchers”

Helpful Maneuvers

Tamara Chansky

- Empathy: “This feels really bad right now.”
- Normalizing: “I think anyone would feel upset who was in this situation.”
- Validating: “It seems right now nothing you can do is right.”
- Making it a manageable size: “Let’s work on this when you are ready.” “How big does this feel to you?”

Helpful Maneuvers

Problem solving: “Can we think of what your choices are to fix this?”

Choices to move on: “We can help that happen faster by doing an activity.”

Encouraging a shift: “What needs to happen so you can do that (move on)?”

Total Meltdown Attack

adapted from Tony Atwood

- Stay calm and reassuring
- Stay with the person but distant physically
- Do not ask what is causing the distress
- Do not try to fix the problem
- Do not move too close
- Briefly explain that the feeling will go away
- Minimal conversation or distraction

OCD: Obsession

- Fears of contamination/germs
- Bad things will happen
- Need for symmetry, precision and closure
- Need to tell, confess, ask or know with certainty
- Saving/hoarding
- Moral dilemnas/religious pre-occupations
- Sexual and forbidden thoughts
- Obsessive slowness (includes “just right”)
- Magical thinking (numbers, colors, words have effect)

OCD: Compulsions

- Washing, cleaning, grooming
- Repeating, retracing and redoing
- Touching or tapping; Checking; Counting
- Ordering, arranging
- Reassurance seeking
- Confessing and apologizing
- Hoarding
- Mental Rituals

CY-BOCS

- CY-BOCS = Child Yale-Brown Obsessive Compulsive Evaluation
- Measures what are obsessions and compulsions as well as how disruptive to life the OCD is
- Score reports: Sub-clinical, Mild, Moderate, Severe and Extreme
- Moderate or higher score often benefits from combination of CBT and Medication; helpful to track success of treatment

Being an Unwitting Accomplice

Aureen Wagner, Ph.D.

- Step back and get perspective
- Catch yourself in the act
- Recognize unsustainable commitments
- Use therapist's guidance to ease your way out
- My rule of 3: Participate 3 times, then remind child of your rule of 3; time rules to re-engage in the OCD again

Readiness for CBT

Aureen Wagner, Ph.D.

- Stabilization: medication may be needed; reduced expectations at home and school may ease pressures
- Communication: Exposure work may take awhile to get to; child friendly language is helpful to understand what the therapist will be doing

Readiness, cont.

- Persuasion: helps see the necessity for change, the possibility for change and the power for change.
- Collaboration: the child is the vital partner in treatment. Freedom of choice to participate is very helpful

Tics: Motor and Vocal

- Motor: eye blinking, head jerk, finger flexing (is this a mild chorea?), smelling objects, jumping/twirling, finger or arm snapping
- Vocal: throat clearing, tongue clicking, sniffing, humming, grunting

Tics: Motor and Vocal

- Yale Global Tic Severity Scale: number, frequency, intensity, complexity, and interference of the motor and vocal sounds in the child's life
- Scored 0-50, the higher, the more severe
- Tics are worsened by stress, fatigue and excitement

Tics

- Tics can be suppressed but not denied. A child may not show much at school in contrast to home. Concentrating on things often helps decrease

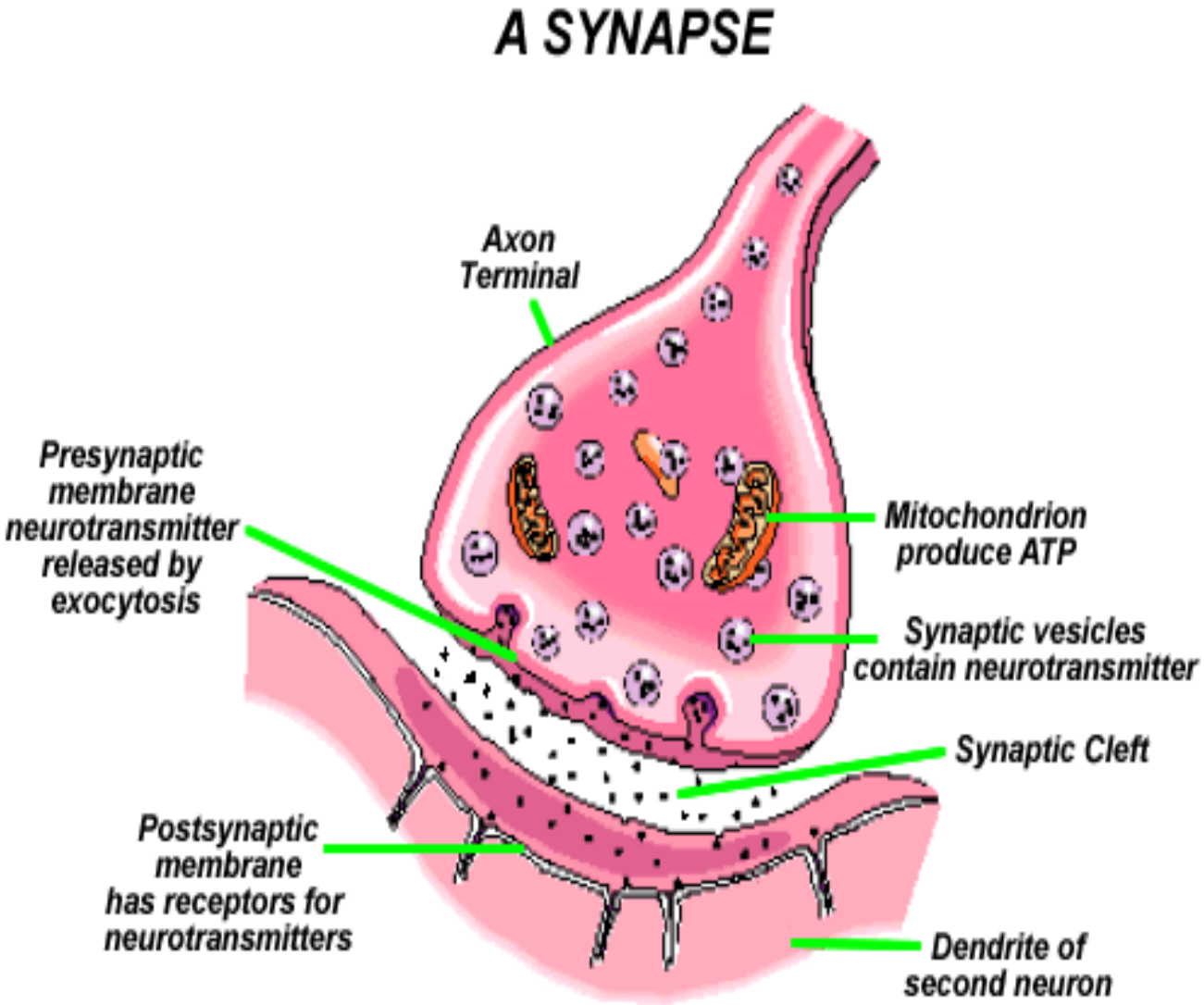
Tic Support

- Tics are often not noticed all of the time by person doing them. If you bring attention to the tic, there will likely be a short increase of the activity
- If there are no tics present, you can stimulate them by asking about them
- Focus on: Child'schoices and what a child can do
- Co-morbidity of OCD and ADHD is high and needs intervention as well.

Tics

- Treatment is often “do nothing” since it is not heavily interfering
- Medications can help (see later section on medications to help treat Tics)
- Reverse Habit Therapy: It is hard to find clinician trained in this therapy.

Cells and Synapse



Cellular Activities

- Actions take place in receptor sites on the cell walls and the channels and uptake pumps where sodium, calcium, etc. influence how things flow through. Receptors are also in the channels
- Genetics of Neurotransmitters (Dopamine, Serotonin, Norepinephrine) impacts transporters, receptors, etc. Meds also work to increase (agonist) or decrease (antagoninst) flows of Neurotransmitters

Dopamine (DA)

- The key neurotransmitter for the Basal ganglia.
- Impacts: Alertness, cognition, appetite, motor control, reward, working memory, motivation, voluntary movement, motivation, punishment, sleep, mood, attention, working memory and processing speed

Serotonin (5HT)

- Satisfaction: learning memory, pleasure/pain, relaxation
- A neurotransmitter that affects the regulation of mood (pleasure/pain), appetite, sleep, learning and memory, relaxation, and muscle contraction.
- 80 % of Serotonin is made in gut, the remainder in the Central Nervous System

Norepinephrine (NE)

- A neurotransmitter and our stress hormone
- NE = Focus vs. DA = Alertness
- Attention, balanced mood, intuition, concentration: execution, perseverance and recall memory

Norepinephrie (NE)

- A neurotransmitter and a hormone, affecting concentration, synthesized from Dopamine.
- Epinephrine = Adrenalin, it underlies the flight or fight response.
- Physical symptoms connected to adrenalin include increased heart rate, blood pressure and muscular tension

Alpha 2 Adrenergic Recpetors

- Norepinephrine and Epinephrine (Adrenalin) signal through this pathway. Consider this an anti-adrenaline pathway, i.e. calming NE.
- Work on pathway of secondary messengers, not involving the dopamine system
- Treats: ADHD, Impulsivity/Reactivity, Tics in addition to lowering BP and HR

Other Terms to Know

- Glutamate (excitatory)/Gaba (calming) and their ratio
- Antioxidants: cleans up the rust (oxidation) of damage or death of a cell. There is a high amount of rust when there is inflammation. Common antioxidants are glutathione, vitamins C, A and E.

Terms to Know

- Brand vs. Generic: think of Kleenex vs Tissue

- Isomer: a) A molecule which has an almost identical molecular formula, (right or left side) to another molecule

- Removing a “hand” changes drug action and side effects. Ex: Ritalin to Focalin; Adderall to Vyvanse, Celexa to Lexapro

Terms to Know

- New Versions of Old Drugs: XR, XL, CR, all change length of action or distribution of medication
- Examples: Adderall and Adderall XR, Luvox and Luvox CR

Neurobiology of Anxiety

Norepinephrine and Epinephrine (Adrenalin) imbalances – leading to physical symptoms of Anxiety

- Balances of Gaba (Gamma-aminobutyric acid) (calming) vs. Glutamate (excitatory)
- Amygdala – facial recognition, flight, fear
- Note: All antidepressants are used for antianxiety treatment

Antidepressant: SSRI's

(Selective Serotonin Reuptake Inhibitors)

- Prozac (Fluoxetine): FDA approved for child/adol for depression and OCD
- Zoloft (Sertraline): FDA approved for child/adol anxiety, depression and OCD
- Luvox (Fluvoxamine): FDA approved for child/ adol OCD
- All are used for Anxiety, Depression and OCD in children and adolescents.

Anti-Anxiety Medication

- Benzodiazapines: Increases Gaba release

2-4 hours: Xanax (Alprazolam), Halcion (Trizolam), Serax (Oxazepam), Versed (Midazolam),

4-6 hours: Ativan (Lorazepam), Prosom (Estazolam), Restoril (Temazepam)

6-8 hours Dalmane (Flurazepam), Klonopin (Clonazepam), Librium (Chlordiazepoxide) Valium (Diazepam)

Side effects can be a problem: sedation, dizziness, cognitive problems; can be addictive

Anti-Anxiety Medication

- Atarax/Vistaril(Hydroxyzine) and Benadryl (Diphendydramine): anti-histamines, cause sedation
- Buspar (Buspirone): an alternative to benzodiazepines, no addictive properties, 2-3 x per day for dosing and often needs a higher dose and patience (6-8 weeks) to see full effect

Anti-Anxiety Medication

- For stomach aches and not eating (and great if is also not going to sleep easily at night): Cyproheptadine (Pericatin): 4 mg, 1 tab at bedtime. This works to combat nausea in the AM and creates increased hunger through the day. If not sedated from it, can use it 3 x per day for increasing appetite.

Sleep Medication

Helps Sleep Directly

- Melatonin: 1-6 mg, 1 hour before bed
- Ambien (Zolpidem): GABA agonist at benzodiazapine receptors
- Sonata (Zaleplon): same as Ambien in action
- Lunesta (Eszopiclone): same as Ambien
- Rozarem (Ramelteon): Melatonin receptor agonist

Sleep Medication

By Side Effect

- Clonidine
- Trazodone, Mirtazapine = Anti-depressants
- Benadryl, Periactin, Vistaril = all anti-histamines
- All Benzodiazapines: Xanax, Ativan, Klonopin, Resoril
- Anti-Psychotics: Seroquel, Geodon, etc.

Medication for Tics
Clonidine and Guanfacine

- **Clonidine** = Catapres (brand)
- Clonidine: tablets, 2 x per day
- Kapvay = slower release but 2 x per day dosing
- Catapres Patch (skin release)
- **Guanfacine** = Tenex (brand)
- Guanfacine: tablets 3 x per day
- Intuniv: slow release, 1x per day

Clonidine and Guanfacine

- All can cause fatigue, sleepiness, lowered heart rate, lowered BP, orthostatic hypotension (dizzy when changing lying position to sit, sit to stand due to BP drop)
- Helpful at lowering Adrenalin (physical side effects of anxiety, e.g., flight/fight), lowers reactivity and hyperactivity
- 2 to 4 weeks to effect. Titration needed to avoid side effects

Medications for Tics

Antipsychotics

- Side effects: Common: sedation, weight gain, increased lipids, motor restlessness; Less common: Tardive Dyskinesia, Dystonias, Metabolic Syndrome (increased risk for heart and diabetes issues), Neuroleptic Malignant Syndrome
- *Cogentin (Benztropine), Artane (Trihexyphenidyl)* Block Extrapyramidal symptoms (Parkinsonian)

Medical Adjunctive Treatments

- Folic Acid (Vit. B9): Luecovorin, **Deplin**
- S-Adenosyl methionine: SAM-e

Obsessive Compulsive Treatment CBT and Medication

- Young and older children “with insight” can benefit from Cognitive Behavioral Therapy (CBT).
- Emphasis is on the OCD, not the child, as the problem. Naming the OCD as “the bad guy”
- The child has to be able understand the idea of exposure and to tolerate temoporary discomfort

Obsessive Compulsive CBT

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Medications for OCD

- Anafranil (Clomipramine): 75 – 250 mg/day
- Prozac (Fluoxetine): 20-80 mg/day
- Zoloft (Sertraline): 50-200 mg/day
- Luvox (Fluvoxamine): 100-300 mg/day
- Paxil (Paroxetine): 20-80 mg/day
- Celexa (Citalopram): 20-60***mg/day (FDA warning >40 mg per day)
- *** Notice Dose Ranges***

FDA Approved for Child/ Adolescent

- Clomipramine (Anafranil-DA/NE/5HT combo): for OCD
- Fluvoxamine (Luvox), Fluoxetine (Prozac), Sertraline (Zoloft) FDA approved for child/adol for OCD
- Used but not child approved: Paroxetine (approved for adult OCD) (Paxil), Citalopram (Celexa), Escitalopram (Lexapro, an isomer of Celexa)

Medications for OCD

Experimental

- Riluzole: anti-glutamanergic, calms over excitement of brain by glutamine
- NAC (N-acetylcysteine): an amino acid, some suggestion, helpful in trichotillomania

Sample letter for schools:

I am the prescribing clinician for _____. _____ has the DSM-IV/V diagnosis of _____. The diagnosis of _____ is secondary to Pediatric Acute Onset Neuropsychiatric Syndrome (PANS). This syndrome occurs after an infection, often strep throat (but can also occur secondary to flu, mononucleosis, Mycoplasma Pneumonia or Lyme). It is believed that the body's antibodies mis-identify the caudate nucleus of the basal ganglia in the brain and attack this area. The caudate nucleus is very important in voluntary movements as well as being highly involved in learning and memory. Inflammation in this area causes many symptoms, which can vary child to child. This is a reference article from NIH for your review of this syndrome: http://intramural.nimh.nih.gov/pdn/web.htm.

Symptoms of this syndrome can include the following:

- Obsessive Compulsive behavior
- Tics, vocal and/or motor
- Severe separation anxiety, sometimes not being able to leave the house, often severe when the child is going to bed
- Generalized anxiety which may progress to episodes of panic and a terror-stricken look. Stomach aches are often present. Night sleep is often disturbed with night mares or awakenings that did not occur before.
- Motoric hyperactivity, abnormal movements including hand and finger movements, restlessness
- Sensory abnormalities, including hypersensitivity to light or sounds, food restrictions, changes of food choices, distortions of visual perceptions and occasionally visual or auditory hallucinations.
- Concentration difficulties and a loss of academic abilities, particularly in math and visual-spatial areas. Handwriting can decline
- Increased urinary frequency and a new onset of bed wetting
- Irritability (sometimes with aggression) and emotional lability. Abrupt onset of depression can occur with thoughts about suicide
- Developmental regression, including temper tantrums and baby talk

Next: List your child's symptoms with any necessary detail. For example: "Harry has had separation anxiety, obsessions about harm to parents, and urinary urgency. Harry should be allowed to go to the bathroom as he needs without punishment.

I urge everyone working with _____ to be alert to these symptoms so that his parents and I can respond quickly to treat him. Also, I am requesting that the school nurse and his teacher alert his parents if anyone in his class has strep. They do not need to know who the person is, just that someone has been diagnosed with strep.

Signature

*** If you want a word document copy of this, email me requesting this.****

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Thank You

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