Childhood Onset Bipolar Disorder

Bipolar Disorder - mania with or without depression.

Mania - elevated, expansive, or irritable mood - in COBPD, most usually irritability

accompanied by 3 of these (or 4 if mood is irritable)

1. inflated self-esteem or grandiosity
2. decreased need for sleep
3. increased talkativeness or pressure to keep talking
4. racing thoughts or flight of ideas
5. distractibility
6. increased activity or psychomotor agitation
7. excessive involvement in pleasurable activities that have a high potential for painful consequences

Bipolar I Disorder

Episodes of both mania and depression. Fairly long periods of normality between the episodes. Usually more time depressed than manic.

Bipolar II Disorder

Mostly depression, with occasional episodes of hypomania, but not mania. Usually people will have long episodes of depression and virtually no time of wellness.

Cyclothymia

Many episodes of Hypomania and occasional episodes of mild depression. A child may have quite a few episodes of hypomania over the span of a year.

Mixed States

Show signs of depression and mania at the same tie. Most often the moood is depressed and there are thoughts of suicide and hopelessness.

Rapid Cycling Bipolar Illness

Many cycles of mania and depression each year.

Risk factors for Individuals with Relatives with Bipolar Disorder

Relative	*Bipolar Patient*
Identical twin	70%
Fraternal twin	15-25%
Offspring of one ill parent	15-30%
Offspring of two ill parents	50-75%
Sibling	15-25%
Second-degree relative	3-7%
General population	1%

How COBPD differs from adult BPD

- faster cycling - many times a day
    - ultra rapid
        - most typical pattern in COBPD - associated with low arousal states in the mornings followed by increases in energy in late afternoon or evening.
    - untra-ultra rapid, or ultradian
        - shorter episodes - rarely will any state last for a day
- often mania and depression are mixed
- intense moods last for weeks or months in adults
    - in kids, mood swings may occur many times in a day

COBPD in children - What to Look For

- **Family Hx**
    - Bilineal transmission
        - mood disorder, especially bipolar disorder
        - substance abuse
            - if not present, be diligent in ruling out COBPD
- ***hallmarks*** - sleep disturbance and unprovoked aggression
- co-occurrence: inflexible and oppositional, extremely irritable, explosive rage - can last for hours, shifting moods, hyperactivity
- Initial episode often presents as depression
    - usually a child will show signs of depression before episodes of mania. Perhaps as much as 3-4 years earlier.
    - this makes review of family hx. extremely important
- can look like ADHD, CD, ODD, stress, schizophrenia
    - these don't suddenly get 10 times worse
- COBPD is more often accompanied by psychosis than in adults
- substance abuse in older children
    - continuing to abuse substance is one of the most important predictors of a child getting ill again.

Subjective Signs of Bipolar depression

- very slowed down movements
- feeling like you are made of lead
- too much sleeping
- hallucination or strange beliefs
- severe worthlessness

Early signs: beginning in *infancy*

- heightened response to stress
- difficulty settling

- difficulty regulating sensory stimulation
    - any physical sensation that is not "just right" is extremely irritating.
- sleep disturbance -
    - "the wide-eyed baby of the nursery"
    - night terrors
- separation anxiety
    - occurs long before and remains long after what is seen in non-bi-lolar disordered children.

<u>Signs later in childhood</u>

- rapidly shifting irritable moods alternating with period of elation
- hyperactivity
- fidgetiness
- raging
    - often occurs after parental constraints
    - parents may describe this as "wild-eyed"
- oppositional behavior - disobedience to authority figures
    - they lack the flexibility that allows for smooth transitions
    - any request or expectation may be viewed as a stressor.
- fear of death and annihilation
- high levels of anxiety
    - (particularly in response to separation from mother figure)
- easily frustrated
- bedwetting and soiling
- alternating between a grandiose and self-deprecatory self-image
- problems decoding social cues
    - bossy, intrusive, overwhelming, aggressive, or (rarely) very charismatic
- precociousness
    - may do things early and with gusto
- impulsiveness
- risk-taking
- temperature dysregulation
    - very reactive to hot and cold. (environments and foods)
- craving for carbohydrates and sweets
    - sudden demands for certain foods to the exclusion of others, and food aversions.
- bedwetting and soiling (especially in boys)
- labile mood
- hallucinations
    - auditory, visual, tactile and olfactory
- suicidal ideas
    - suicidal thoughts, self-mutilation, preoccupation with death
- likelihood of becoming addicted to psychoactive drugs such as marijuana and cocaine

Unipolar vs. Bipolar - what to look for

- marked craving for sweets and carbohydrates
- prolonged and aggressive temper tantrums
- lethargy
- oversleeping
- separation anxiety
- self-consciousness with others
- phobic anxiety

Comorbidity

Bipolar rarely occurs by itself.

- ADHD
- OCD
- ODD
- CD
- LD

COBPD and ADHD

- *prescription of a stimulant for a child predisposed to bipolar may induce early onset or negatively influence the cycling pattern of the illness*

- Flight of ideas in COBPD
- difficulty sustaining attention in ADHD

- Destructiveness in both
    - Intentional in COBPD; carelessness & inattention in ADHD

- Physical outbursts and temper tantrums
    - caused by limit-setting in COBPD - may remain angry for hours
    - Triggered by sensory and emotional over-stimulation in ADHD - calm down soon.

- Dysphoria
    - not a prominent sx in ADHD

- Wakefulness in morning
    - ADHD - usually alert within minutes of waking
    - Bipolar - may be irritable, slow to arouse

- Regression during angry episodes
    - rare in ADHD.

- Engagement in dangerous behavior
    - ADHD - unintentiona
    - Bipolar - child is seeking risk

- Bipolar - early sexual interest and behavior

- Sleep problems
    - Nightmares, often with morbid content
        - Common in COBPD
        - Rarely associated with ADHD
    - Decreased need for sleep in COBPD

- Bipolar - often show giftedness in certain cognitive functions

- Psychotic sx.
    - ADHD - not present
    - Bipolar - may be present

- Onset
    - ADHD - insidious
    - Bipolar - a change in functioning occurs.

<u>Conduct Disorder and COBPD</u>
- CD typically emerges during adolescence.
- Also, in CD, the child's motives for behaviors that have potential for painful consequences are more hurtful, vindictive, antisocial.
- No psychosis in CD
- Onset
    - CD - insidious
    - Bipolar - a change in functioning occurs.

<u>ODD and COBPD</u>
- 80% of COBPD children meet DSM-IV criteria for ODD (in preliminary findings)
    - oppositional behavior is defensive in nature
        - the child is attempting to gain control, to feel safe when the world feels threatening.
        - this inflexibility leads to greater conflict with parents, teachers and the larger social environment.
        - the constant exercise of oppositional behaviors, while an attempt to preserve self-identity, leads to further isolation of these children
            - this limits the possibility for healthy interactions that might serve to provide the sense of self-control they desire.

Social problems

- Peer relationships stressed by difficulties in shifting and sustaining attention
- Teacher rarely sees explosive tantrums, just attention problems, fidgetiness and occasional abundance of mischievous energy.

COBPD and the Brain

- evolutionary development of the brain and nervous system
    - bottom up - increasingly in complexity from bottom to top
- major task of nervous system - to maintain homeostasis and to integrate incoming information from the environment
- this activity is concentrated in the hypothalamus (located near the center of the brain)
- hypothalamus communicated with the limbic cortex (emotional brain) and cerebral neocortex (thinking brain) through hormonal, neuropeptide, and neurotransmitter systems.
- hypothalamus and limbic cortex structures maintain homeostasis by regulating four functions: hormonal secretions, autonomic nervous system, the emotions and drives, and body temperature.
    - dysfunction in the limbic-hypothalamic circuit may be responsible for shortened REM cycle and persistently low body temperature (96.5 - 97.4 degrees F) in children with COBPD.
- limbic system exchanges incoming information with the hypothalamus, neocortex, and the autonomic nervous system.
    - limbic system and hyphthalamus govern sexual desire, hunger, thirst, response to fear, fight - flight.
    - information derived from sensory experience and momentary events is filtered through the limbic system and imbued with meaning from memories and emotions associated with these events.
        - meaning is then assigned to current event.

- startle response
    - evolved to protect the organism from harm. Generates stress response (fight-flight)
    - occurs because information travels from sensory neurons in the body via neurochemical pathways to the cerebral cortex and amygdala (in the limbic system)
    - habituation is a protective response of closing down the nervous system.
    - Bipolar children have a more intense startle response from a very early age.

- Amygdala
    - alarm center of the brain.
    - receives signals of potential danger.
    - Initiates signal of fear or rage to the visual cortex, where it is analyzed for appropriateness of response.
    - bipolar children (as well as LD and ADHD children) have difficulty with integration of sensory information

        - this leads to misinterpretation of normal social cues (light touch, facial expression, etc.) as threatening.

- Stress Response
    - the hypothalamus regulates the pituitary, which in turn releases adrenocorticotropic hormone (ACTH), which activates the adrenal gland to release cortisol, setting off the stress response.
    - glucocorticoids: receptors of cortisol
    - reduction in glucocorticoids can be caused by chronic stress
    - leads to reduction in capacity to shut off adrenal stress response
        - causes greater sensitivity to cortisol
    - children with COBPD may have genetic vulnerability that predisposes them to a low threshold of response to stressful events.
        - fortunately, a nurturing environment can buffer effects of this vulnerability.

- norepinephrine system
    - serves to bring an individual to an alert state in novel situations.
        - almost totally silent during REM, fire slowly during slow-wave sleep, and fire at maximum capacity during period of alertness.
        - distractibility of COBPD and ADHD may be related to disturbances in this system.
            - stimulant drugs increase norepinephrine release
            - drugs that increase central norepinephrine transmission (tricyclic antidepressants and stimulants) induce mania and increase cycling.

- sertonergic neurotransmitter system
    - located in the raphe nuclei
        - provides serotonin terminals to the suprachiasmatic nucleus - master clock of circadian system
        - disruption of raphe activity leads to changes in circadian rhythms
            - increae in sensitivity of nerve cells in the suprachiasnatic nucleus may be related to antidepressant-induced switching in COBPD

- Hyppocampus
- theta rhythm of the hyppocampus is involved in either prolonging attention or habituates to a signal from the environment.
    - when functioning smoothly, a person can make a smooth transition from one state to another
    - poorly modulated arousal systems predispose a person to emotional imbalance and distractibility of attention.
        - brain of the COBPD child registers sensory information either too intensely or hardly at all.
            - over-arousal - child interprets events as irritating, or threatening

        - when attending to too many stimuli, the child is distractible - can not discriminate between stimuli that is helpful and what is not.
        - this could explain the two poles of behaviors in COBPD: defiant, oppositional, aggressive, OR fearful, anxious, cautious.
- G-Proteins
    - lithium and omega-3 fish oils may inhibit activity of signal transduction pathway, reducing cAMP responsiveness, which determines the firing rate of locus coeruleus neurons (influencing sleep/wake and behavioral alerting responses.)

- Cortocotropin-Releasing Factor (CRF) and Neurpeptide Y (NPY): Effects on Behavior
    - NPY neuron are found in suprachiasmatic nucleus (master clock of circadian rhythms) which receives information from eyes regarding light/dark and send it to hypothalamus
    - CRF is thought to coordinate coping responses to stress.
    - Effects of NPY and CRF are linked to behaviors associated with Bipolar Disorder.
    - CRF and NPY are known to effect: appetite, energy storage, energy expendature
        - NPY stimulates carbohydrate craving, hormone secretion, increae in appetite, promotes energy storage
        - CRF blunts energy storage, blunts food intake and boosts energy expendature
    - Cortosol levels dramatically effect both systems
        - may be fundamentla in alteration of energy balance seen in Bipolar Disorder.

- Circadian Dysregulation
    - circadian clocks generate rhythms of REM, body temperature, etc.
        - it has been postulated that a dysregulation of the circadian system may be responsible for cycling of BPD, sleep arousals in COBPD, tendency for ultradian and seasonal cycling
            - Episodes of depression and mania increase in Spring and Fall (vernal and autumnal equinoxes).
                - Changes in rates of dark to light or light to dark transitions
            - effects of a glitch in circadian system may become more pronounced when these dramatic light/dark variations occur.

<u>Family Experience of COBPD</u>
- denial and fear - each family must proceed through recognition, adjustment and adaptation at their own rate
- shame - ashamed to admit to the outside world that they are not in control of their child's behavior.
- socially outcast - outsiders, even other family members, may blame the parents for the behavior of the child.
- isolation - may parents begin to isolate their family to avoid criticism and the possibility of a public "rage."

Parenting the Child with COBPD

- "Raging" - behavior modification, time out, reasoning, force, punishment will not stop this.
    - the child can not appreciate the meaning of this.
    - What to do? Prioritize: 1. Safety issues - things a parent has to insist on. 2. Negotiable items, 3.things not worth fighting over - does the child *really* have to sit at the table to eat? Does the parent really want to deal the turmoil of forcing this?

Potential for Suicide

- Most often occurs during a mixed state.
    - this underscores the importance of careful monitoring of the use of antidepressants.
- Need to warn parents of signs of suicidal intent.
    - Teach them of the importance of talking with their children about it, rather than waiting for their child to bring it up.
- Also need to warn them of the potential lethality of this disease.
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Treatment

First

* stabilization of mood *
* treat sleep difficulties
* psychotic sx., if present

Next: once stabilized

- Psychotherapy
    - reduction of stress to curtail future manic episodes
    - discuss temper tantrums and rage
        - help the child understand and verbalize the intensity of an event that typically causes irritability and rage
        - help the child find ways of recognizing and shifting inner states
    - assist the parents in the reduction of tension between them
        - they need each others' support
- Psychoeducation
    - help child understand nature of illness and how it affects his/her emotions and behavior
    - education about need for enough sleep, management of stress, dangers of substance abuse.

*Drug Therapy

Mood Stabilization:

These drugs may stop cycling and child may still be depressed

- lithium carbonate (Lithobid, Lithane, Eskalith)
- divalproex sodium (Depakote, Depakene)
- carbmazepine (Tegretol)

- New Mood Stabilizers:
- gabapentin (Neurontin)
- lamotrigine (Lamictal) not under 16 y.o.
- topirimate (Topomax)

Psychotic Symptoms and Aggresive Behaivor:
- Atypical Antipsychotics:
- risperidone (Risperadal)
- olanzapine (Zyprexa)
- quetiapine (Seroquel)

- Traditional Antipsychotics:
- thiodazine (Mellaril)
- trifulperazine (Trilafon)
- halperidol (Haldol)

Reduction of anxiety induction of sleep, and halt of rapid-cycling swings in activity and energy
- clonazepam (Klonopin)
- lorezapam (Ativan)
- catapres (Clonidine)
- guanfacine (Tenex)

Depression:
- <u>do not</u> use antidepressant medications without mood stabilizer
    - may induce mania or hypomania (rapid-cycling), irritability, aggression.
- light therapy - may be helpful for depression and morning wakening
    - light therapy impacts circadian rhythms in rapid cycling patients
    - 15 minutes between noon and 3:00 pm daily
    - pineal glad receives info about light from nerve pathways. Melatonin, sleep-inducing hormone, is secreted by pineal gland.
- ECT - safe and effective option
    - energy levels are typically given at lower levels for children and adolescents due to lower seizure thresholds

<u>Drugs to avoid</u>
- Beta blockers (such as propranolol) - can induce depression
- caffeine - may increase arousal
- imipramine or desipramine (used to treat bedwetting)
- steroids - particularly cortisol derivatives. Even if topically applied (such as hydrocortozine 1 %) may induce mania
- St. John's-wort and Ginko biloba - can activate a bipolar child

- Sudafed or any medication that contains pseudoephedrine - increases arousal and anxiety states.

Course and Prognosis

- between 20-30% of children who have severe depression will become manic later in their lives.
- More likely if depression came on suddenly, included psychosis, or family hx of BPD

Features that make another episode of mania less likely

- no family hx.
- medical induction (like steroids)
- no other neuropsychiatric disorders
- sudden onset of mania after a stressor
- a history of good functioning before illness
- and most importantly no prior episodes

Features that make another episode more likely

- family hx.
- numerous co-morbid psychiatric disorders
- poor functioning before illness
- rapid cycling
- mixed mania and depression
- and long hx of bipolar illness

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