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Obsessive Compulsive Disorder

- General
  - Second most common psychiatric illness (after depression) in both children and adults
  - In youth, symptoms can be hidden; takes ~4-6 months before parents are aware of symptoms
  - It takes an average of 8 years before psychiatric help is sought for OCD
  - The correct diagnosis is often not made until 17 years after the onset
  - To meet formal criteria for OCD, it must cause distress (anxiety, depression, suffering); must be time consuming (>1 hours/day), must be impairing
  - Obsessions and compulsions by definition impair function and/or cause distress.
  - Symptoms center on four themes: contamination, sexual/aggressive/checking, ordering/symmetry, and hoarding.
  - Compulsions usually involve observable behaviors but can involve mental rituals.
  - Typically chronic, with a waxing and waning course
  - 50% of cases are severe, 35% moderate, and 15% mild
- Symptoms (for kids)
  - You ask grown-ups or friends for something over and over again, and you don't give up if the answer is no. You just can't seem to stop asking, even if you know the answer will still be the same.
  - You wash your hands ten times instead of one. You wash them until they are red and chapped, even though it hurts.
  - You count things, such as cracks in a sidewalk or patterns on the ceiling, over and over.
  - You check things again and again to make sure they are "right". For example, you check your homework over and over for mistakes, even though you didn't find any the first time.
  - You touch things a certain number of times.
  - You collect useless things, such as scraps of paper and candy wrappers.
  - You can't throw anything away for fear of needing it again
  - You start all over again when you mess up, because you think that what you're doing has to be "perfect."
  - You hear a certain song in your head over and over, no matter what you do
  - You have frequent thoughts about killing or hurting yourself or someone else—if you do, please talk with a family member or a doc like me
  - You have constant doubts that you shut the door or zipped your backpack, or other such things. So you check and recheck, just to make sure.
  - You need to have things lined up just right, whether it's food or items on your desk or dresser.
  - You doubt your every move; for example, you think you're not walking through a doorway or closing the cabinets in "just the right way". You constantly think you didn't do it right or didn't do it at all.
  - You imagine bad things happening to you or your family and can't make the thoughts stop.
- Obsessions:
  - Repetitive thoughts, images, or urges that are intrusive, inappropriate, and distressing
  - Defined by
    - unwanted, intrusive, fixed or repetitive ideas, thoughts, images or impulses that are recognized as one's own
    - patients usually recognize that the thoughts are excessive
    - realize they spend too much time worrying
  - Most common:
    - Germs/contamination — 70%; elsewhere 38%; ~85% in childhood OCD
    - Aggressive — 70%
    - Somatic (body) — 45%; elsewhere 7%
    - Religious — 35%; elsewhere 6%
    - Fear of personal harm — 24%
    - Fear of harm to others
    - Symmetry — 10%
    - Sexual — 5.5%
    - Hoarding — 5%
    - Unacceptable urges — 4.3%
    - Excessive sense of "right" and "wrong"
    - Unrealistic and bizarre thoughts such as fear of AIDS contamination during prepuberty

        - Intrusive and unwelcome mental pictures, which can be of violent, sexual, or obscene nature
- Compulsions: repetitive behaviors or mental acts that the person performs to reduce distress or to prevent a feared outcome; irresistible impulse to act regardless of the rationality of the motivation
    - Most common:
        - Washing 70%; elsewhere 27%
        - Repeating (to be 'just right') 70%; elsewhere 11%; 50% in childhood OCD
        - Checking 60%; elsewhere 28%; 46% in childhood OCD
        - Counting 40%; elsewhere 2%
        - Scrupulosity 13% in childhood OCD
        - Mental rituals 11%
        - Order'g/arrang'g, symmetry 6%; 17% in childhood OCD
        - Hoarding/collecting 3.5%
        - Compulsive slowness; difficulty with making even minor, everyday decisions
- Dimensional approach
    - Different factors
        - Doubt and checking
        - Contamination and cleaning
        - Taboo thoughts (aggressive, sexual, religious)
        - Symmetry and ordering
        - Hoarding
        - Miscellaneous
    - Factor I
        - Obsessions about aggression to the self or others obsessions
            - Responds well to CBT
        - Sexual obsessions
        - Moral obsessions
        - Related compulsions
        - Respond less well to SSRI's
    - Factor II
        - Symmetry obsessions
        - May respond better to MAOIs
            - Responds well to CBT
        - Exactness obsessions
        - Repetition/checking compulsions
            - Responds well to CBT
        - Counting compulsions
        - Ordering compulsions
            - Responds well to CBT
        - Related obsessions and compulsions
    - Factor III
        - Contamination obsessions
        - Cleaning or washing compulsions
        - Respond less well to SSRI's
        - Responds well to CBT
    - Factor IV
        - Hoarding obsessions and compulsions
        - Respond less well to SSRI's
- Prevalence
    - 2-3% lifetime prevalence (of the world's population)
    - 2-3% lifetime-weighted prevalence in youth
        - In Britain, prevalence in children 0.25% but up to 12% when subsyndromal forms are included
        - Another study concluded the range is 0.5-2%
    - Half of cases present in childhood, before age 11, ~90% by age 18
    - Median age of onset 19 (versus 32 in major depression)
    - 25% of cases before the age of 14
    - Mean age of onset in adult patients

        - Male: 13-15 yo (elsewhere: 18 yo)
        - Female: 20-24 yo (elsewhere 21 yo)
    - Mean age of onset and peak of symptoms in youth patients is 10 years
        - Male: 9
        - Female: ~11
    - Male patients are more likely to
        - have a family member with OCD or tic disorder
        - show more severe symptoms
        - have co-morbid tic disorder
    - Incidence: range is 0.35% (in the US) to 3.6% (in Israel)
- Prevalence of OCD in individuals with other disorders
    - 20-60% of those with Tourette syndrome
    - 22% of those with intermittent explosive disorder
    - 13-27% of those with trichotillomania
    - 12.5-30% of those with compulsive buying
    - 12-14% of those with compulsive sexual behavior
    - 6-52% of those with skin picking
    - 3-9% (4-6% current) of those with depression
    - 1-20% of those with pathological gambling
- Hoarding disorder
    - Criteria
        - Persistent difficulty discarding or parting with possessions
        - Difficulty is due to perceived need to save the items and to distress associated with discarding them
        - Difficulty results in the accumulation of possessions that congest and clutter active living areas and compromises their intended use
        - Clinically significant distress or impairment in functioning
    - General
        - 2-5% prevalence in US
        - 20.6% in US have difficulty discarding things
        - Typically chronic and progressive course
        - Insight varies but is often poor
        - Self-reported problems with attention
        - Co-morbidity is common
            - 50% with major depression
            - 24% with generalized anxiety disorder
            - 24% with social anxiety disorder
            - 18% with OCD (other than hoarding)
    - Treatment
        - Open-label study of Paxil: 31% decrease in OCD symptoms (Saxena et al, 2006)
        - Open-label study of Effexor XR: 31% decrease in hoarding symptoms (Saxena et al, 2011)
        - Pilot study of methylphenidate (Rodriguez et al, 2013)
        - CBT
- Co-morbidities (prevalence of other disorders in individuals with OCD)
    - General
        - 57-69% have at least one additional psychiatric diagnosis
        - 30% have multiple additional diagnoses
        - Efficacy is less when OCD is co-morbid with other psychiatric diagnoses
        - Co-morbidity is associated with higher rates of relapse
        - Hoarding subtype is associated with more co-morbid diagnoses, more symptom severity, more functional impairment
    - Bipolar disorder: high rate; when co-morbid, obsessions more likely to be existential, philosophical, odd and/or superstitious
    - Body dysmorphic disorder: highly co-morbid and closely related
        - Formally classified as a somatoform disorder
        - Formal diagnosis
            - Preoccupation with an imagined defect in appearance or markedly excessive preoccupation with a slight physical anomaly that is present
            - Causes clinically significant distress or impairment in social, occupational or other areas of functioning

- Not better accounted for by other disorders (e.g., eating disorders)
- Compulsions: comparing with others, camouflaging disliked body areas, excessive grooming, touching disliked areas, mirror checking, reassurance seeking, skin picking, excessive tanning, excessive exercising, clothes changing, seeking dermatologic products, compulsive shopping (e.g., for beauty products)
- Carrying out the compulsions are usually repetitive, time-consuming, excessive, rule-bound/rigid, not pleasurable

- 32-38% have had OCD in their lifetime
- Age of onset usually 16-17 yo
- Chronic course
- 1-1.9% of females, 1.2-1.4% of males
- Family history often positive for OCD
- Neuropsychologically, often misinterpret faces as angry, negative
- Treatment: SSRI's, CMI, CBT

- Other

	Current	***Lifetime***
Depression	31-66% with major depression; 26% in kids	67%
Tics (short of tic disorder)	30-50% with tics in kids	---
None	26% sole diagnosis in kids	---
Reading/language	24% with reading and language delays in kids	---
Disruptive behavior disorders (including ADHD, also see below) 22%		
Anxiety disorders (including generalized anxiety disorder, also see below) 19%		
Tic disorders	17-20%	
Gen'd anxiety do, kids	16%	
Skin picking	12-24%	---
Social phobia	11-18%	18%
Opposite'l defiant do, kids	11%	---
ADHD kids	10-30%	
Eating disorder	8-17%	17%
Alcohol abuse/dependence	8-14%	14%
Simple phobia	8-22%; 17% in kids	22%
Separation anxiety do, kids	7%	21%
Panic disorder	6-12%	12%
Tourette syndrome	5-7%	7%
Trichotillomania	4-7.5%	---
Compulsive buying	2-24%	---
Intermittent explosive do	2-10%	---
Kleptomania	2-6%	---

  - Not always clear if ADHD symptoms are related to primary ADHD or to consequences or pathology of OCD
  - Of patients with tic disorders, 19% suffer from OCD as well, 46% from obsessive-compulsive symptoms
  - Of patients with Tourette syndrome, 40-70% have OCD or obsessive-compulsive symptoms
  - The Tourettic OCD Syndrome
    - "Tic-related" OCD may be a specific subtype of OCD with obsessions of symmetry and exactness and a need to do and redo activities to achieve a sense of completion or a sense of things looking, feeling, or sounding "just right"
    - Genetic vulnerability to Tourette syndrome increases the risk of tic-related OCD which is, on the surface, indistinguishable from Tourette syndrome
  - Associated with:
    - Earlier age of onset
    - Males>females
    - Symptomatology that includes touching, tapping, and rubbing
    - Less frequent elaborate obsessions and beliefs in catastrophic consequences
    - May or may not have higher percentage of violent and aggressive intrusive thoughts and images
    - Concerns about symmetry and exactness, just-right/just-so, arrangement, positioning, evening up, ordering, touching and numbers
    - Compulsions not associated with anxiety but with sensory phenomena such as localized physical tension, generalized somatic discomfort, and diffuse psychological distress
    - May have early signs of sensory hypersensitivity
  - See separate handout

- Compulsive sexual behav'r 2-5% ---
- Pathological gambling 0-2% ---

- Course, in adults and in children:
  - Often a chronic course which waxes and wanes
  - Full remission in 10-15% of adult patients and somewhat more in youth patients
  - Eisen et al, 2013:
    - Remission
      - Patients with primary obsessions regarding overresponsibility for harm were two times as likely to experience a remission
      - Patients with primary hoarding were less likely to achieve remission
      - Lower severity and shorter duration prior to treatment correlated with high chance of remission
    - Relapse (after remission)
      - 59% of those that remitted experienced a later relapse
        - Patients with full remission: 45% relapsed
        - Patients with partial remission: 70% relapsed
      - Patients with co-morbid obsessive compulsive personality disorder were twice as likely to relapse
  - 2007 summary of data:
    - Up to 65% achieve a 20-40% reduction in symptoms with antidepressants
    - Only 25% or less achieve remission (after 8-12 weeks on an antidepressant)
  - Catapano, 2006:
    - 48% no respond to first SRI (serotonin-reuptake inhibitor med)
    - 31.6% of those who did not respond to first trial achieved partial remission with second trial
    - 15.4% of those who did not respond to second trial did respond in 3 or more trials
    - Relapse high: 60%
  - Van Oppen, 2005: 5-year follow-up: 54% in full remission
  - Reddy, 2005: 12 year follow-up data
    - 24% continued to have clinical OCD
    - 33% had subclinical OCD
    - 43% had no evidence of OCD.
    - Severe long-term course in 10%
    - 85% of patients experience changes in their symptoms which generally take the form of different obsessions, content of obsessions, and compulsions existing sequentially or simultaneously, but with the latest to develop gradually dominating those that had begun earlier
  - On average, patients who seek treatment have waited a decade after symptoms emerged
  - If tics are present, obsessions often involve violent or sexual themes, or focus on symmetry.
  - Youths with OCD
    - In children, development of compulsions may precede development of obsessions, and they may lack insight about their symptoms; very early-onset OCD (before the age of 6) usually begins with a unique ritual rather than obsessive thinking
    - Childhood-onset OCD is associated with a poorer treatment response, higher familial risk, and a high rate of co-morbid tic, disruptive behavior, and developmental disorders
    - Over 50% of children cite a precipitating event prior to the onset of OCD.
    - Poor prognosis in youth OCD is associated with a co-morbidity with tics and other temperamental/personality traits, not necessarily OCD symptom severity
    - 80% of cases of early-onset OCD are associated with the presence of other psychiatric disorders
      - major depression in 50%
      - ADHD, ODD, or multiple anxiety disorders in 50%
      - wetting or speech/language disorders in 33%
      - tics often develop later.
    - 23-70% of children with OCD have a chronic course
    - 12-50% of children no longer meet criteria when re-evaluated 1-7 years later.
    - 40-60% of individuals of all ages are partial responders or nonresponders to treatment.
  - On average, people lose about two years of work-related functioning directly due to OCD
  - 13% of individuals with OCD attempt suicide in response to OCD symptoms.
  - OCD could be viewed as evolutionarily conserved normal behaviors which are disinhibited or overactivated.
  - Between 45-90% of persons with Tourette's syndrome have obsessions and compulsions; family genetic studies show that the two disorders may be linked.

- Biology of OCD
  - Anatomy; involves:
    - Hyperactive circuit between basal ganglia, thalamus, and orbitofrontal cortex
    - Frontal-subcortical circuits
      - anterior cingulate gyrus: bigger
      - dorsolateral prefrontal cortex: reduced gray matter bilaterally; improved over 6 months of treatment
      - globus pallidus: smaller
      - amygdala: bigger (in kids)
    - Abnormal white matter microstructure in
      - parietal region (supramarginal gyri)
      - right posterior cingulate gyrus
      - left occipital lobe (lingual gyrus).
  - Multicenter mega-analysis, de Wit et al, 2014
    - Smaller volumes in
      - Frontal gray and white matter bilaterally
        - Dorsomedial prefrontal cortex (PFC)
        - Anterior cingulate cortex (ACC)
        - Inferior frontal gyrus extending to the anterior insula
    - Increased
      - Cerebellar gray matter bilaterally
    - Differences in
      - Putamen
      - Insula
      - Orbitofrontal cortex (OFC)
      - Temporal cortex bilaterally
  - Associated with increased activity of caudate, orbitofrontal-medial prefrontal cortex, anterior cingulate, amygala, and thalamus
  - Brain changes in adult OCD appear to normalize with successful treatment with serotonin-reuptake inhibitors (SSRIs) and (separately) with cognitive behavioral therapy.
  - Recent study linked enlarged volume of the left amygdala (a major fear center in the brain) with pediatric OCD; this enlargement is reversed with SSRI treatment
  - Inflammation in the neurocircuitry of OCD (Attwells et al, 2017); inflammation found in
    - Dorsal caudate
    - Orbitofrontal cortex
    - Thalamus
    - Ventral striatum
    - Dorsal putamen
  - Genetics
    - Risks in relatives
      - 6.2-fold increased risk for clinical patients with definitive OCD; in community subjects, 1.6-fold increased risk
      - 2.2-fold increased risk for clinical patients with subclinical OCD; in community subjects, 3.4-fold increased risk
      - Risks in first degree relatives
        - 3.4-35% of the first degree relatives of clients with OCD also have OCD (depending on the study); 4-fold increased risk
        - 10.3-11.7% (range 10-15%)
        - When diagnosis broadened to subsyndromal OCD
          - 16.3-18.2%
          - 4-5.7% in controls (with no family history)
          - 6-fold increased risk overall
      - Unaffected first-degree relatives demonstrate impaired cognitive flexibility and motor inhibition
      - Risk of other diagnoses in first degree relatives
        - 4.6% prevalence of Tourette syndrome and tics
          - 4.8-9.7 fold increased risk of OCD in first degree relatives of patients with Tourette syndrome
          - 1% in controls (with no family history)
    - Gene candidates
      - Serotonin transporter gene—SLC6A4
        - One genetic mutation (I425V) results in increased production of the serotonin transporter, which leads to increased recycling of serotonin in the synapse (the space between neurons) with subsequent decrease in serotonin availability for neurons.
        - The L-L geneotype of HTTLPR is twofold more common in adults with OCD
          - The L allele is twice as likely to be transmitted from a parent to child with OCD
          - Rare combination of two mutations is associated with severe form of OCD
      - Chromosome 3 gene
      - Chromosome 9 gene (SLC1A1)that when abnormal sabotages glutamatergic functioning
      - Chromosome 14 markers D14S588 and C14S1937 associated with hoarding
      - 5HT1d and 5HT2a
      - SLITRK1 gene

        - involved in neuronal growth
        - rare variant of a sequence within it associated with Tourette syndrome and OCD symptoms
- COMT--l/l genotype of COMT val158met polymorphism of Afrikaner descent in a study by Lochner, 2005 was associated with the hoarding subtype of OCD
- DRD4 receptor
- MAO-A
- Myelin oligodendrocyte glycoprotein-4