AUTISM, ADHD, ANXIETY: DIFFERENTIAL DIAGNOSES OR CO-MORBIDITIES

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DISCLOSURES

- Neuren Pharmaceuticals
- Alcobra Pharma
- Novartis
- Roche/Covance
- Seaside Therapeutics

- National Fragile X Foundation
OBJECTIVES

- The listener will understand and appreciate:
  - How Autism Spectrum Disorder (ASD), Attention Deficit Hyperactivity Disorder (ADHD) and anxiety disorders can be confused with each other diagnostically
  - The processes by which these disorders can be disentangled from each other
  - The approach to treating these disorders when they co-occur
CURRENT DIAGNOSTIC CRITERIA—DSM-5

- Persistent deficits in social communication and social interaction across multiple contexts, currently or by history
  - Social emotional reciprocity, nonverbal communication behaviors, deficits in relationships

- Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history
  - Stereotyped, repetitive movements or speech; insistence on sameness; restricted, fixated interests; abnormal reactivity to sensory input

- Symptoms are present early in development

- Symptoms cause current clinically significant impairment

- Not better explained by intellectual disability or global developmental delay
EDUCATIONAL DEFINITION OF ASDS

“In the state and federal education guidelines, Autism (AU) is defined as “a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age 3, that adversely affects a child’s educational performance. In addition, it is noted that “Other characteristics often associated with the special education eligibility of autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines and unusual responses to sensory experiences.”
NON-SPECIFICITY OF DEFINITION

- Interpretation of parental report
  - Schools rely heavily on parent- and teacher-rated behavior scales
- Conceptualization of observed behaviors
- Accuracy of diagnosis
- Impact on prevalence rate
SOCIAL COMMUNICATION AND INTERACTIONS

- Affected by many diagnoses in addition to ASDs
- Abnormal social skills are not always indicative of ASDs
- Differentiation of social communication and interaction deficits that are the hallmark of ASD vs other disorders is not always straightforward
SOCIAL ISSUES

ADHD

• Poor eye contact secondary to poor attention span
• Missed social cues secondary to poor attention span
• Less socially appealing and successful secondary to poor turn-taking, poor listening, impulsive behaviors

Anxiety disorders

• Poor eye contact secondary to timidity and/or fear
• Less socially appealing and successful because of odd or inappropriate fears and worries
• Obsessions, compulsions, rituals may appear similar to restricted, repetitive behaviors in ASD

Language disorders

• Lack of ability to understand others’ communication and to express oneself greatly impacts ability to form social relationships
• Reaction to unsuccessful communication can lead child to be socially reticent
• Odd verbal output is off-putting to peers in particular
• Verbal output can appear "scripted" and repetitive
DIAGNOSTIC DILEMMAS

- Less difficult to differentiate between ASD and “simple” ADHD or ASD and “simple” anxiety

- Diagnostic confusion can occur in cases of:
  - Language disorder plus ADHD vs ASD
  - Language disorder plus anxiety vs ASD
  - Language disorder plus ADHD plus anxiety vs ASD

- In fact, untreated ADHD and untreated anxiety can lead to false positive ADOS results
Vagueness of educational category of ASD may lead to inaccurate conclusions by school systems, in particular.

- Less confidence in identifying anxiety and other internalizing disorders.

Co-morbidity is common:
- ASD vs other diagnoses
- ASD plus other diagnoses
DIAGNOSTIC APPROACH

- Address child at his/her developmental and language level
- "Demand-free" interaction
- Pace and duration of assessment
- Assessment setting is crucial
  - Not medical exam room
  - Not testing room
DIAGNOSTIC APPROACH

- Diagnostic certainty may not be achieved during the initial assessment
  - Even at comprehensive, multi-day assessment at an autism center
- May need to treat conditions and/or symptoms with which the child presents, forestalling an answer to question of ASD or not
CO-OCCURRING PSYCHIATRIC SYNDROMES

- Historically, this has been a source of controversy
- Are the emotional and behavioral issues seen in ASD epiphenomena or manifestations of true co-occurring psychiatric disorders
- Kaat, Gadow and Lecavalier (2013) found
  - 81% of children were impaired by symptoms of at least one psychiatric disorder
  - ADHD --- 67%
  - ODD --- 35%
  - GAD --- 32%
  - Social phobia --- 28%
ANXIETY DISORDERS

- A universal consequence of ASD
- A co-morbidity, i.e., a disorder that is distinct from ASD and similar to anxiety disorders in typically developing children
- A unique disorder, altered by co-occurrence with ASD
  - Kerns, Kendall et al., 2014
ANXIETY IN ASD

• Support for the last two items
  • 37% --- no anxiety disorders
  • 17% --- traditional DSM-5 co-morbid anxiety disorders
  • 15% --- atypical anxiety
    • “...anxiety is altered in its pathogenesis and presentation by its interaction with ASD-related traits”
• 31% --- traditional and atypical anxiety
  • Kerns, et al., 2014
ATYPICAL ANXIETY IN ASD

• In the absence of generalized worry,
  • A worry about minor changes in routine or schedule, about breaking rules or about losing access to preferred activity

• In the absence of generalized sensitivity to noise or sensory stimuli,
  • Unusual specific fears
    • Happy birthday song, bubbles, balloons, coughing

• In those who lack an awareness of social judgment,
  • Frenzy in settings where others are present

• In the absence of a clear desire to prevent distress or a feared outcome,
  • Rituals, insistence on use of specific phrases, insistence on specific clothing, food items, etc.
Almost 40% of youth with ASD meet criteria for at least one anxiety disorder

- van Steensel, et al., 2011

Diagnosing an internalizing disorder in youth with ASD can be more challenging

- Possible language impairment
- Possible cognitive impairment
- Possible difficulty in conveying information about emotions
CHALLENGES TO ASSESSING ANXIETY

- Overlap between symptoms of anxiety and ASD
  - Social avoidance vs lack of engagement
  - Repetitive behaviors present in OCD, GAD and SAD and in ASD
    - Serve to bind anxiety or may be a preferred activity unrelated to emotional distress
- Possible unique expressions of anxiety in those with ASD
  - Increased repetitive behaviors
  - Increased tantrums and aggression
  - Worsening of sleep problems
ANXIETY DISORDERS IN ASD: TREATMENT

- Consider environment
- Optimize educational programming and therapeutic interventions
- Modified CBT
- Medication
ANXIETY AND ASD: TREATMENT

- Modified cognitive behavioral therapy may be helpful in youth with high-functioning ASD
  - More parent involvement
  - Visual supports
  - Greater repetition and practice of strategies
  - Practitioners with experience working with youth with ASD
ANXIETY AND ASD: TREATMENT

- Medication
  - Not rigorously studied in youth with ASD
  - Medications with efficacy for treatment of anxiety disorders in typically developing (TD) youth can be tried
    - Selective serotonergic reuptake inhibitors
    - Alpha-agonists and propranolol (physiologic symptoms)
    - Benzodiazepines (situational anxiety)
Preliminary data indicates that youth with ASD are more prone to activation with treatment with selective serotonergic reuptake inhibitors (SSRIs)

- Increased activity level, impulsivity, insomnia, disinhibition without manic symptoms
- Start at low doses and advance slowly
- Use liquid preparations in order to increase dose options
CO-OCCURRING ADHD

- Prior to DSM-5, those with ASD could not be diagnosed with ADHD
- Studies show 22-83% of children with ASD meet DSM-IV criteria for ADHD
- 30-65% of children with ADHD have clinically significant symptoms of ASD
- Clinically, the overlap of symptoms and symptom descriptions have led to children receiving one diagnosis, and then, the other
ATTENTION

· Notice taken of someone or something; the regarding of someone or something as interesting or important
  · www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=attention&*

· **Attention** is the behavioral and **cognitive process** of selectively concentrating on a discrete aspect of information, whether deemed subjective or objective, while ignoring other perceivable information.
  · https://en.wikipedia.org/wiki/Attention
ATTENTION

- Developmental---the older a child, the longer he/she can sustain attention
- Impacted by:
  - Novelty
  - Group vs individual settings
  - Interest
  - Sick/tired/hungry

INATTENTION

- Common complaint of parents when describing their children
- A non-specific symptom present in many disorders
  - ADHD
  - ASD
  - Anxiety
  - Depression
  - Bipolar disorder
  - Intellectual disability
  - Language disorders
<table>
<thead>
<tr>
<th>Age Range</th>
<th>Attention span</th>
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<tbody>
<tr>
<td>8 – 15 months</td>
<td>can usually attend for one minute or a little longer to a single toy or activity; easily distracted by new event</td>
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<tr>
<td>16 – 19 months</td>
<td>able to sustain attention to one structured activity for 2-3 minutes; noise or visual input is very distracting</td>
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<td>20 – 24 months</td>
<td>can stay attentive to an activity either with or without an adult for 3-6 minutes; still has difficulty ignoring sounds, but pays attention better with an adult</td>
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<td>25 – 36 months</td>
<td>can generally pay attention to a toy or other activity for 5-8 minutes; can shift focus from activity to an adult and back to activity with verbal cues from adult to pay attention</td>
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<tr>
<td>3 – 4 years</td>
<td>can usually attend to an activity for 8-10 minutes; can shift attention from activity to an adult talking and back to activity independently</td>
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http://day2dayparenting.com/childs-attention-span-long-able-focus/
MEANING OF INATTENTION

Intellectual Disability
- Inattention is commensurate with developmental level, not with chronological age
- Activity level and impulsivity are also commensurate with developmental level

ADHD
- Diagnosis of exclusion
- Primary and persistent pattern of inattention across settings and situations
MEANING OF INATTENTION

**ASD**
- Lack of joint attention
- Lack of engagement with others
- Attends to restricted interests

**Anxiety**
- Pays attention to issues about which he/she is anxious to the exclusion of other topics
CO-OCCURRING ADHD

- Twin-, family-, linkage, candidate gene, genome-wide association (GWA), and sequencing studies show that ASD and ADHD share a portion of their heritable etiology (Lichenstein et al. 2010), (Antshel et al., 2013)

- 50-72 % of contributing genetic factors overlap (Lichenstein et al. 2010)

- Neuropsychologically, both disorders show deficits in executive functioning and theory of mind

- Multiple environmental risk factors are implicated in both disorders
  - Exposure to lead, PCBs, mercury, alcohol, tobacco

- Sokolova and colleagues (2017) suggest that causal modeling fits with the theory that ADHD is a less severe subtype within the ASD spectrum.
Multiple studies show the efficacy of stimulants in those with ADHD and ASD (Handen et al., 2000; Network RUOPPA, 2005; Nickels et al., 2008).

- IQ and gender do not predict response
- Effect sizes are smaller in ASD population vs non-ASD population
- Response rate is lower in ASD population vs non-ASD population
- Adverse effects are more common in ASD population vs non-ASD population

Modest support for use of atomoxetine and alpha-agonists
Address environmental stressors.
Consider educational and therapeutic settings.
If patient has anxiety, address this with CBT and/or medication.
  • It may be very difficult to distinguish anxiety and ADHD.
  • If patient has untreated anxiety and ADHD, addressing the ADHD first may exacerbate anxiety.
Reassess from a diagnostic standpoint.
If patient has ADHD, address this.
Reassess from diagnostic standpoint.
Determination of ASD as an accurate diagnosis may not be possible until this time.
THANK YOU FOR YOUR ATTENTION
QUESTIONS AND COMMENTS