Autism and ADHD in Corpus Callosum Disorders

Mary Pipan, MD
Children’s Seashore House
Children’s Hospital of Philadelphia
(215) 590-7994/7525
pipan@email.chop.edu

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Autistic Features of CC Disorders

- Emotional Non-communicativeness
- Social indifference
- Echolalia
- Meaningless out of place language
- Lack of understanding of social behavior
- Poor social judgement
- Difficulty interpreting facial expressions
- Difficulty with inferring what others are thinking
- Poor pragmatic language skills

Autism in CC Disorders

- 9 percent overall
- 4 percent in higher functioning individuals
  - Schimnoeller et al, 2004

Autistic features very prominent in all surveys of such behavior.

What is Autism?

- Deficits in Social Interaction
- Deficits in Communication
- Stereotyped and Repetitive Behaviors

What is Autism?

- Other Common Characteristics
  - Emotional Dysregulation
  - Sensory Integration Issues
  - Lack of Theory of Mind
  - Extreme Inflexibility and Adherence to Routines
  - Aggression and Self injurious behavior

Common misperceptions

- Children with Autism don’t
  - Talk
  - Smile
  - Make eye contact
  - Play
  - Want attention and affection
  - Want friends
Why identify autism in children?

- Understanding of behavior
- Learning to interact with others a core human need: basis for all social behavior
- Appropriate therapies
- Educational intervention

Autism: the Spectrum

- Mild to Severe
- Can be seen at all levels of ability
- More common in children with more developmental disability
- PDD-NOS or Autistic Spectrum Disorder:
  - meet most but not all criteria
  - mild symptoms
- Asperger’s Syndrome:
  - Autism Spectrum Disorder
  - Average intelligence and language abilities

Social skills and Communication

- Require cognitive skills at every level:
  - Language
  - Visual perceptual/motor skills
  - Problem solving skills
  - Social communication
  - Emotional regulation
- Perceived and performed quickly, efficiently, often w/o thinking

Deficits in social skills and communication

- Language Disorder
- Hearing deficits
- Cognitive disability
- Learning disability
- Attention problems
- Processing difficulty
- Emotional dysregulation
- Autism

Social communication

- Joint attention:
  - Sharing attention, emotions, intentions and experiences
  - Responding to others sharing attention, emotion, intention and experiences
- Use of symbols to communicate joint attention

Communicative Symbols:

- Nonverbal:
  - Gestures
  - Facial expressions
  - Vocal expression
  - Language
Symbols
• Learned through observation and modelling
• Abstract
• Learning needs to be tied to communication
• Practiced through everyday use and imaginative play

Gestures
• Conventional: particular to a certain culture, age, family
  – Arms up
  – Point
  – Nod yes
  – Shake no
  – Shush
  – Blow kisses

Gestures
• Unconventional/Nonspecific
  – Cry
  – Grunt
  – Throw
  – Kick/hit
  – More sign
  – Head on desk

Facial expression
• Pre-intentional: Non communicative
  – Reflecting internal states
• Intentional:
  – Paired with eye contact
  – Intent of sharing emotion with another
• Range of facial expression
• Appropriateness of facial expression

Vocal expression
• Intonation
• Loudness
• Prosody
• Intensity

Language
• Signs
• Pictures
• Speech
• Writing
Language

• Increasing levels of abstraction
  – Objects
  – Functional: More, eat, no
  – Verbs, adjectives, pronouns, etc.
  – Past, present, future
  – Ideas
  – Discourse

• Functions
  – Call attention
  – Emotions
  – Needs/wants
  – Interests
  – Experiences
  – Conversation/chatting

All practiced through play

• Functional use of objects (12 to 15 mo)
  – Feeding self with spoon, talking on phone
• Pretend objects (15 to 18 months)
  – Feeding a doll, using a block as food
• Sequencing steps in play (24 months)
  – Setting table, feeding doll, doing dishes
• Turn taking
• Role play (3 to 4 years)

Early difficulties with joint att’n and conventional symbols:

• Not paying attention to relevant cues
• Being distracted by nonfunctional use of objects
• Lack of opportunity for practice
• Nonspecific words
• Difficulties recalling words out of context
• Difficulties with speech/articulation

Sterotyped Behaviors and Restricted Interests

• Unusual sensory interest in materials or persons
• Unusual hypersensitivity to sensory input
• Hand, finger or body complex mannerisms

• Preoccupations with unusual activities or objects
• Circumscribed interests
• Repetitive nonfunctional use of toys
• Repetitive actions
• Insistence on unusual routines
• Rituals
Interventions

• Depends on level of language and social engagement
• Goals:
  – Social engagement
  • Peers and adults
  • Play skills
  • Turn taking and reciprocity

Interventions

• Communication
  – Encourage use of communication for variety of functions, and situations
  – Communication temptations
  – Conventional use of symbols
  – Noticing communication of others

Interventions

• Emotional Regulation
  – Identifying emotions of self and others
  – Recognizing source of emotions
  – Problem solving what to do with emotions
  – Regulating state of arousal

General References

• Autism Speaks Website
  – www.autismspeaks.org

• Online Aspergers Syndrome Information and Support (OASIS) website
  – www.udel.edu/bkirby/asperger

ADD and CC disorders

• Attention problems common in behavioral surveys
  – Badaruddin 2007

Attention

• Arousal and alertness
• Selectivity, focus
• Maintaining attention
• Divided attention
• Shifting attention
Attention

• The functional relationship between the individual and environmental stimuli:
  – Gaining attention
  – Sustaining attention
  – Suppressing Attention to Distractors

Environmental influences of attention

• Visual components
• Timing
• Persons providing the stimulus
• Contingencies/consequences
• Learning history

ADHD

• Heterogeneous
  – Symptoms vary in severity, pervasiveness, frequency and impairment
• Neurobehavioral disorder

Multiple contributing factors

– Neuroanatomic
– Neurochemical
– CNS insults
– Genetic
– Environmental

Theories of ADHD

• Deficit in behavioral inhibition
• Executive function deficit
• Working memory
• Self-regulation of affect-motivation-arousal

  – Russell Barkley

Executive functions (Metacognition)
(Information processing)

• Selects, controls and monitors use of cognitive strategies
• Interference control
• Effortful and flexible organization
• Strategic planning
Comorbidity

- Depression: boys/girls 15/30%
- Bipolar Disorder: 10%
- Anxieties: 32/26%
- Conduct Disorder: 20/7%
- Substance use disorder
  - Unmedicated: 30-35%
  - Medicated: 10%
- Learning Disabilities: 15/30%

DSM-IV criteria

- Six or more of the nine hyperactive/impulsive criteria or inattentive criteria
- Present for at least 6 months
- Maladaptive
- Inconsistent with developmental level

DSM-IV criteria

- Symptoms present in more than one setting
- Some symptoms causing impairment present before age 7
- Impairment in social, academic or occupational functioning
- Not accounted for by another mental disorder

Hyperactivity-Impulsivity

- Fidgets or squirms in seat
- Leaves seat when expected to stay in it
- Runs or climbs excessively
- Difficulty playing quietly
- Often on the go, acts as if “driven by a motor”
- Talks excessively
- Blurs out answers before question completed
- Difficulty awaiting turn
- Interrupts or intrudes on others

Inattention

- Fails to give close attention to details, makes careless mistakes
- Difficulty sustaining attention in tasks/play
- Doesn’t listen when spoken to directly
- Does not follow instructions/complete work
- Difficulty organizing tasks and activities
- Avoids/dislikes tasks requiring mental effort
- Loses things necessary for tasks or activities
- Easily distracted
- Often forgetful

Making the diagnosis

- History and physical
- Parent questionnaires vs. structure interviews
- Teacher questionnaires
- Classroom observation
- Review for comorbidities
**Treatment**

- Behavioral
  - Behavior Management Techniques
  - Cognitive behavioral therapy
- Medication
- (Neurodynamics)
- Other

**Stimulants**

- First line for ADD/ADHD
- Norepinephrine and dopamine reuptake inhibitors
- Weak norepinephrine agonists
- Improvements (70% of subjects)
  - core symptoms
  - noncompliance and impulse aggression
  - social interactions
  - academic productivity and accuracy

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**Methylphenidate (Ritalin)**

<table>
<thead>
<tr>
<th>Methylphenidate</th>
<th>Duration</th>
<th>Form</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ritalin</td>
<td>4 hrs</td>
<td>Tablet</td>
<td>5, 10, 20</td>
</tr>
<tr>
<td>Focalin</td>
<td>4 hrs</td>
<td>Tablet</td>
<td>2.5, 5, 10</td>
</tr>
<tr>
<td>Methylin</td>
<td>4 hrs</td>
<td>Chewable</td>
<td>2.5, 5, 10</td>
</tr>
<tr>
<td>Methylin Oral Sol’n</td>
<td>4 hrs</td>
<td>Liquid</td>
<td>5, 10 per 5cc</td>
</tr>
</tbody>
</table>

**Sustained Release MPH**

- Concerta
  - 12 hrs
  - Hard cap
  - 18, 27, 36, 54
- Metadate CD
  - 12 hrs
  - Sprinkle
  - 10, 20, 30, 40, 50, 60
- Focalin XR
  - 12 hrs
  - Sprinkle
  - 5, 10, 15, 20
- Ritalin SR
  - 12 hrs
  - Tablet
  - 20
- Ritalin LA
  - 8
  - Sprinkle
  - 10, 20, 30, 40
- Metadate ER
  - 8
  - Tablet
  - 10, 20
- Datran Patch
  - 6 to 12
  - Skin patch
  - 10 (27.5), 15 (41.3), 20 (65), 30 (82.5)

**Dextroamphetamine**

- Dextrostat
  - 2 to 4 hrs
  - Tablets
  - 2.5, 5, 10
- Adderall
  - 4 to 6 hrs
  - Tablets
  - 5, 7.5, 10, 12.5, 15, 20, 30

**Dexedrine: long acting forms:**

- Dexedrine Spansule
  - 8 hrs
  - Sprinkle
  - 5, 10, 15
- Adderall XR
  - 12 hrs
  - Sprinkle
  - 5, 10, 15, 20, 25, 30
- Vyvanase
  - 8 to 12 hrs
  - Capsule/contents may be dissolved in H2O
  - 30, 50, 70
Stimulant Side Effects:

- Decreased appetite
- Insomnia
- Irritability
- Somnolence (zoned)
- Stomach/head ache
- Dysphoria
- Emotional lability

Stimulant Side Effects:

- Increased habits
- Increased anxieties and perseverative tendencies
- Social withdrawal
- Tics
- Rebound
- Hallucinations (dexedrine)

Strattera

- Norepinephrine re-uptake inhibitor
- 10, 18, 25, 40, 60, 80, 100mg
- May take up to 4 weeks to see effects
- 2nd or 3rd line
- Side effects: suicide warning, irritability, abdominal pain, nausea, sleepiness, TAKE with FOOD

Alpha agonists

- Guanfacine (Tenex) 1mg tabs
- Clonidine (Catapres)

3rd line

- Tricyclic antidepressants
- Wellbutrin
- Polypharmacy
- Not indicated for (run of the mill) ADHD:
  - Risperdal and other neuroleptics
  - SSRI’s

General References

- Taking Charge of Your Child’s ADHD, by Russell Barkley
- Children and Adults with Attention-Deficit/ Hyperactivity Disorder website
  - www.chadd.org
- Straight Talk about Psychiatric Medication in Children by Tim Wilens
General References

- ADD Warehouse 1-800-233-9273, www.addwarehouse.com