

TBI, autism, and IDD: Acquired causes of neurodevelopmental disorders

Gary Stobbe, MD
Dept of Neurology, UW
ECHO IDD Wraparound
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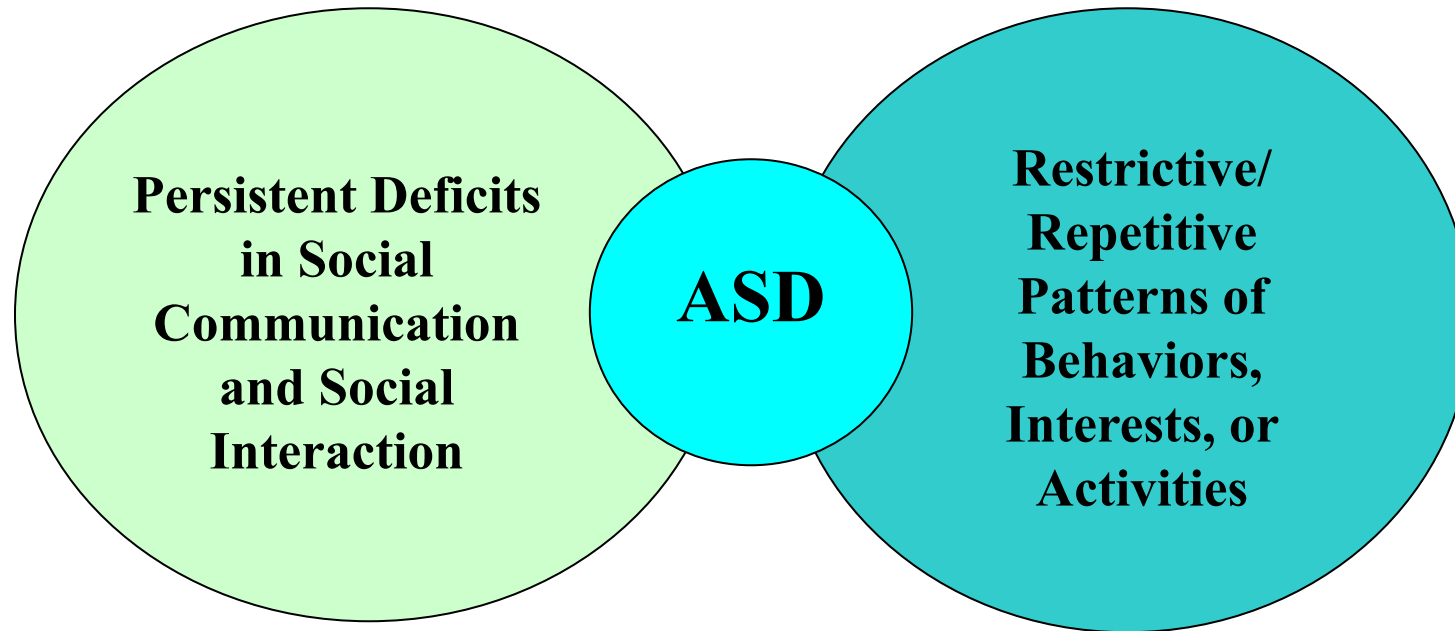
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Objectives

- Review “acquired” biological causes of autism and IDD
- Discuss biomarker testing when diagnosing autism and IDD
- Discuss traumatic brain injury and intersection with autism/IDD

DSM-5 Autism Spectrum Disorders

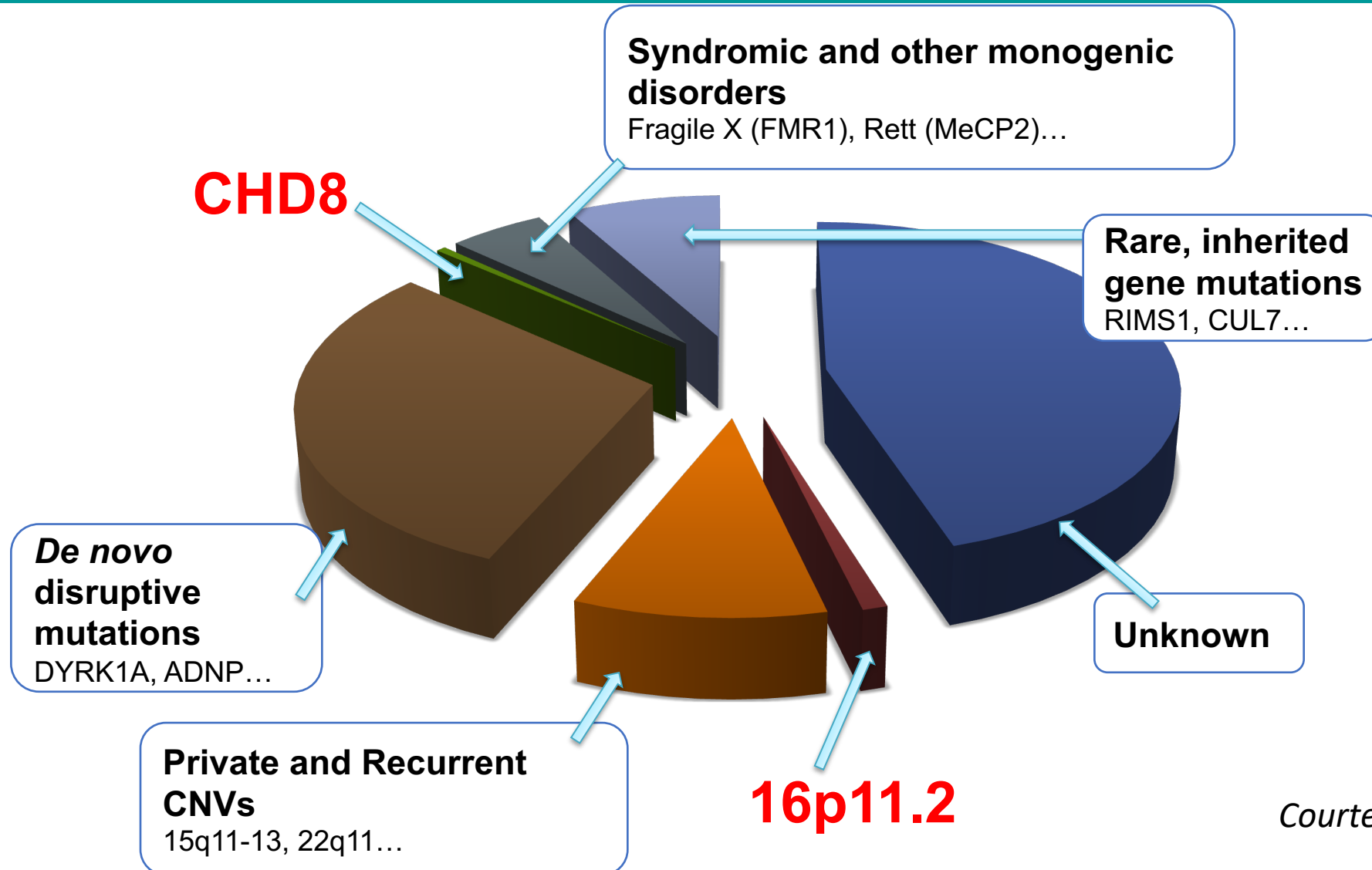


- Features must be *present* in early childhood (< 8 years old)
- *Descriptors - with/without ID; with/without language impairment*
- *“severity” defined by Levels of Support (1-3)*
- **Associated With Any Known: 1] medical/genetic/environmental condition/factor; 2] neurodevelopmental/mental/behavioral disorder, 3] catatonia**

How is ASD diagnosed?

- Defined medically by using specific criteria (DSM-5)
- **No medical test or “biomarker”** (e.g. blood test, brain scan, genetic test)
 - *diagnosing autism does not define the cause*
- Based on developmental history, direct observation and interaction with individual, clinical judgment by qualified professionals

ASD & Genetic Landscape



Courtesy of R. Bernier

Environmental factors in autism

- Advanced parental age at time of conception
- Prenatal exposure to air pollution or certain pesticides
- Maternal diabetes (including gestational diabetes before 26 weeks)
- Prenatal exposure to certain drugs (valproic acid, SSRIs, B2AR agonists)
- Extreme prematurity/very low birth rate
- Oxygen deprivation at birth
- Brain injury (TBI, stroke)
- Brain infection (encephalitis, meningitis)

When does early TBI become ASD?

- Lack of research investigating whether early “acquired brain injury” may be a risk factor for ASD
- Intracerebral hemorrhage (ICH) in premature birth and anoxic brain injury at birth (cerebral palsy)
 - Generally accepted risk factor
- But how about acquired brain injury at later ages?
 - Early acquired brain injury (ABI) may delay an ASD diagnosis (Porter et al, 2023)
 - Schahmann syndrome (cerebellar cognitive affective syndrome) – cerebellar injury/degeneration with executive function, affect, behaviors similar to ASD
- Established normal developmental trajectory differentiates ABI from ASD

When should I obtain brain imaging for ASD?

- No consensus opinions
- Gross motor delay
- Early onset seizures
- Focal deficits on bedside neuro exam
- Global regression
- Recurrent regression

Can early psychological trauma cause ASD?

- Crossover of symptoms from psychological trauma and ASD
- Childhood stress and trauma can worsen ASD symptoms
- Current consensus opinion is psychological trauma does not cause ASD
 - But how can we be sure?

Questions

THANK YOU!

Contact information:

Gary Stobbe

gastobbe@uw.edu

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