Psychosis in Children and Adolescents

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Psychosis – Defined (Maybe)

• **Narrow Definition**: delusions or prominent hallucinations with absence of insight

• **Broad Definition**: delusions, hallucinations, disorganized speech, thoughts and behavior

**Prognostic Value**

• **Adults** – equate psychosis with severe psychopathology

• **Children** – seen in serious psychopathology, non-psychotic psychopathology, psychosocial adversity & physical illness & normal development
Psychosis in Childhood and Adolescence

Psychosis in Children

• 1% in community samples and increases with age
• In clinical samples – 4% children increases to 8% in adolescents
• Fenning et al -18/341 (5.3%) 1\textsuperscript{st}-admission psychotic adults endorsed hallucinations <age 21 (most had not revealed hallucinations to parents/caregivers)

Regier DA, Arch Gen Psych (1984); Fennig S, J Nerv Ment Dis (1997)
Psychosis in Childhood and Adolescence

Hallucinations can be seen in healthy children

• Preschool children – hallucinations vs. sleep related phenomena and/or developmental phenomena (imaginary friends/fantasy figures)

• School age children – hallucination more ominous
Prognosis for Youth with Hallucinations

Findings from a psychiatric emergency service:

- 2-month time period reviewed for youth with hallucinations without psychosis – 62 subjects
- 35 under age 13, mean age 11.4
- 6 subjects VH only, 32 subjects AH only, 24 subjects both VH & AH
- Diagnoses – Depression 34%, ADHD 22%, Disruptive Behavior Disorder 21%, Other 23%
Prognosis for Youth with Hallucinations

Findings from a psychiatric emergency service:

• AH’s “telling child to do bad things” associated with DBD 69% of the time

• AH’s “invoking suicide” associated with depression 82% of the time

• Dispositions: 44% admitted, 39% referred to outpatient services, 3% AMA, 14% “missing”

Psychosis in Childhood and Adolescence

Psychosis in a Pediatric Mood/Anxiety Disorder Clinic:

N = 2031 screened for psychosis:

- 5% - **definite** psychotic symptoms – at least 1 hallucination with score of 3 (definite) and/or at least 1 delusion with score of 4 (definite) (on a 4 point scale) – 18 < age 13; 73 > age 13
- 5% - **probable** psychotic symptoms – at least 1 hallucination with score of 2 (suspected or likely) and/or at least 1 delusion with score of 3 (suspected or likely)
- 90% - with no psychotic symptoms

Ulloa RE, JAACAP (2000)
Ulloa 2000-Distribution of Psychotic Symptoms in “Definite” group
Psychosis in Childhood and Adolescence

Psychosis in a Pediatric Mood/Anxiety Disorder Clinic:

For patients with definite psychotic symptoms:

• 24% Bipolar disorder
• 41% MDD
• 21% Depressive Disorders but not MDD
• 14% Schizophrenia Spectrum Disorders – 4 patients with schizophrenia; 9 with SAD

Ulloa RE, JAACAP (2000)
Psychosis in Childhood and Adolescence

Psychosis in a Pediatric Mood/Anxiety Disorder Clinic:

Interesting findings:

• Distribution of psychotic symptoms were similar for definite vs. probable psychosis
• No difference between children & adolescents in frequency of hallucinations & delusions
• Adolescents had higher frequency of AH’s coming from “outside the head”
• Thought disorder present only in adolescents

Ulloa RE, JAACAP (2000)
Psychosis in Childhood and Adolescence

Psychosis in a Pediatric Mood/Anxiety Disorder Clinic:

Patients with definite vs non-psychotic youths more likely to have:
• Major Depression
• Bipolar Affective Disorder
• Anxiety Disorder – generalized anxiety or Panic disorder

Also – definite patients more likely to have suicidal ideation – mediated by presence of mood disorder

Ulloa RE, JAACAP (2000)
Psychosis in Trauma Spectrum Disorders

Trauma-related hallucinations reported in:

- 9% abused children seen in pediatric clinics
- 20% child sexual abuse victims - inpatient samples
- 75% abused children meeting dissociative disorder criteria

Kaufman J, JAACAP (1997)
Psychosis in Trauma Spectrum Disorders

Hallucinations characterized by:
• Hearing perpetrator’s voice/seeing face
• Often nocturnal
• Associated with impulsive, aggressive and self-injurious behavior, nightmares and trance-like states
• Less likely to be associated with negative symptoms (withdrawn behavior, blunted affect), formal thought disorder or early abnormal development
• Typically resolve with intervention/safety

Kaufman J, JAACAP (1997)
Psychosis in Major Depressive Disorder

- 50% of prepubertal children with major depression may have hallucinations of any type
- Up to 36% may have complex auditory hallucinations
- Delusions are more rare

Chambers WJ, Arch Gen Psychiatry (1982)
Psychosis in Bipolar Affective Disorder

- Prevalence of psychotic features in pediatric bipolar disorder range between 16% to 87.5% depending on age and methods of sampling.

- Most common psychotic symptoms are mood-congruent delusions – mainly grandiose in nature.

- Psychotic features appear in context of affective symptoms.

- Family history of affective psychosis aggregate in probands with bipolar disorder.

Psychosis in Childhood and Adolescence

Cannabis

• Increases risk of developing a psychotic illness in later life

• Associated with younger age of onset in 1st-episode schizophrenia but better cognitive function
Psychosis in Childhood and Adolescence

Organic Syndromes

- Seizure disorders
- Delirium
- CNS lesions
- Metabolic/Endocrine
- Neurodegenerative disorders
- Developmental disorders
- Toxic encephalopathies
- Infectious agents
- Autoimmune disorders
Childhood Onset Schizophrenia

Historical Perspective

DSM-II *Schizophrenic syndrome of childhood* Lumped Autism, Schizophrenia, Disintegrative Psychosis (1968)

DSM-III *Schizophrenia in Childhood and Adolescence* mirrored diagnostic criteria (for the most part) for adult onset (1980)
Childhood Onset Schizophrenia

Criteria:
• Delusions
• Hallucinations
• Disorganized speech
• Grossly disorganized behavior/catatonia
• Negative symptoms

• 6-month minimum duration – includes prodrome, active and residual phases
Childhood Onset Schizophrenia
Epidemiology

Prevalence

• Childhood estimated 1/10,000
• Adolescence – increases with age
• Likely to be diagnosed clinically but not supported when given a structured diagnostic interview

Sex Ratio

• Approximately 4:1 (male : female)
• Ratio trends to even out as age increases
• Adult studies suggest age of onset is 5-years earlier on average for males compared to females
Childhood & Adolescent Onset Schizophrenia

Criteria:
• 1-month active phase (less if treated)
• 6-month minimum duration – includes prodrome, active and residual phases

Unlike adults:
• Marked deterioration in social/occupational functioning modified to include “failure to achieve expected level of interpersonal, academic, or occupational achievement”
Childhood & Adolescent Onset Schizophrenia

**Epidemiology**

**Age at Onset:**
- Rarely apparent before age 9
- Thomsen (1996) followed 312 youths hospitalized for schizophrenia over a 13 year period: only 28 subjects <15 & only 4 < 13

**Onset Type:**
- Insidious onset much more common than acute onset
- Females more likely to have acute onset
Childhood & Adolescent Onset Schizophrenia

**Epidemiology**

**Deterioration in Functioning:**
Adults – marked deterioration in social, occupational relationships & self care

C&A – failure to reach expected level of interpersonal, academic, or social achievement

Russell (1989) – 35 subject with COS (ages 4-13) all had deterioration in level of functioning
Childhood & Adolescent Onset Schizophrenia
Clinical Phenomenology

Hallucinations:
• AH’s - Most common positive symptom – 80%
• VH’s – 30% to 50% of patients and usually accompanied by AH’s
• Tactile Hallucinations – rare

Delusions:
• less common than adult onset – 45%
• Persecutory & somatic more common
• Though control & religious themes rare (3%)
• Delusions more complex in older subjects
Childhood & Adolescent Onset Schizophrenia Clinical Phenomenology

**Affective Disturbances**

- Common – over 75% of cases
- Flattened affect most common finding

**Thought Disorder**

- Illogical thinking and loose association more specific than incoherence & poverty of speech content
- Not specific to COS – reflects impaired communication skill development
Childhood & Adolescent Onset Schizophrenia
Clinical Phenomenology

Cognitive Impairment

• Significant impact on mean IQ
• Most patients function in low average to average range (82 -94)
• Decline from COS to adolescence due to failure to acquire new information/skills, not a dementing process (Bedwell 1999)
Childhood & Adolescent Onset Schizophrenia
Clinical Phenomenology

**Neurobiological Deficits**
- Progressive ↓ in ventricular size
- ↓ cortical grey matter during adolescence (frontal & temporal regions)
- Correlation of total cerebral volumes with negative symptoms
- Frontal lobe dysfunction similar to adults
Childhood & Adolescent Onset Schizophrenia
Course of illness

Prodrome

• Weeks to months – functional impairment
• Wide range of non-specific symptoms including unusual behaviors & preoccupation, social withdrawal & isolation, academic problems, dysphoria, vegetative symptoms

Acute Phase – 1 to 6 months, positive symptoms

Recovery Phase – months, negative symptoms common, depression
Childhood & Adolescent Onset Schizophrenia 
Course of illness

Residual Phase - time between active phases, less positive more negative symptoms

Chronic Illness - Estimate that 25% of COS complete remission, 50% chronic course & significantly impaired

• Insidious onset & younger than 12 predicted poorer outcomes
Childhood & Adolescent Onset Schizophrenia
Differential Diagnosis

**Autistic Disorder**
Similar – impairment in functioning, thought disorder-like symptoms, blunt affect
Differ – Age of onset, developmental history, clinical & family history

**Schizophreniform Disorder** – time, function
**Brief Psychotic Disorder** – time limited, usually stressed induced Personality Disorders
Childhood & Adolescent Onset Schizophrenia
Differential Diagnosis

**Personality Disorders**
- Schizotypal, schizoid, borderline & paranoid may have transient psychotic symptoms

**Affective Disorders**
- Major Depression – Prepubertal children: 48% had any hallucination, 36% AH’s, delusions more rare
Childhood & Adolescent Onset Schizophrenia
Differential Diagnosis

**Affective Disorders**

- Bipolar Disorder – Mania resembles agitation and disorganization of schizophrenia, depressive symptoms resemble negative symptoms of schizophrenia
Childhood & Adolescent Onset Schizophrenia Differential Diagnosis

**Substance Use Disorders**
- Schizophrenia & SUD – highly comorbid
- Amphetamines
- PCP
- MDMA
- Cannabis
Childhood & Adolescent Onset Schizophrenia
Differential Diagnosis

Anxiety Disorders

• PTSD – psychotic like symptoms and hallucinations
• OCD – difficult to distinguish delusions from obsessions; rituals from bizarre behavior – insight helpful??
Childhood & Adolescent Onset Schizophrenia
Differential Diagnosis

Other Nonpsychotic Disorders
• Conduct disorder – may have hallucinations
• Lower rates of negative symptoms, thought disorder & bizarre behavior
Treatment of Psychosis in Children & Adolescents

FDA Approved AP:

1. Aripirazole: Schizophrenia 13 and older; BPAD (acute manic and mixed episodes) 10 and older; Autism with irritability/agitation 6-17 years old.
2. Olanzapine: Schizophrenia 13 and older; BPAD (acute manic and mixed episodes) 13 and older.
3. Quetiapine: Schizophrenia 13 and older; BPAD (acute manic and mixed episodes) 10 and older.
4. Risperidone: Schizophrenia 13 and older; BPAD (acute manic and mixed episodes) 10 and older; Autism with irritability/agitation 5-16 years old.
5. Haloperidol: Psychotic Disorders 3 and older; Tourette's 3 and older: severe behavioral disorders 3-12.
6. Perphenazine: Schizophrenia 12 and older
7. Not approved – Clozapine, Paliperidone, Ziprasidone, Molindone
Antipsychotic Medication Adverse Effects: EPS

Characteristics
• C/A more susceptible than adults
• FGA versus SGA: Risperidone (4 mg) – 53%; Haldol (5 mg) 67%; Olanzapine (12 mg) 56%; Aripirazole 18%
• SSRI’s may trigger or exacerbate EPS

Interventions
• Slow titration
• Lower dose
• Anticholinergics
• B-blockers
• Benzodiazepines
• Switch drugs
Antipsychotic Medication Adverse Effects: Akiethesia

**Characteristics**
- Hard to diagnose
- Initial insomnia might be a key

**Interventions**
- Slow titration (Abilify initiated at 9 mg – 23%; at 2 mg < 10%)
- Lower dose
- Anticholinergics
- B-blockers
- Benzodiazepines
- Switch drugs
Antipsychotic Medication Adverse Effects: Withdrawal dyskinesia

Characteristics
• Appears reversible in youth
• Up to 15% of patients

Interventions
• Slow taper
• Overlap cross titration
Antipsychotic Medication Adverse Effects: Tardive Dyskinesia

Characteristics
- One study on SGA: 3 cases of TD in 783 patients over 12 months
- 0.4% annualized rate on SGA
- Rate is an underestimate (spontaneous reports)
- Non-elderly adults - twice the rate

Interventions
- Lowest effective dose
- Clozapine
- Vitamin E
Antipsychotic Medication Adverse Effects: NMS

Characteristics

• Rigidity
• Autonomic Instability (hypertension/tachycardia)
• Fever
• Leukocytosis
• Elevated CPK
• Probably less prevalent with SGA
Antipsychotic Medication Adverse Effects: Weight gain/metabolic syndrome

Characteristics
12-week study of C/A – AP naïve subjects
• Abilify 4.4 kg
• Risperidone 5.3 kg
• Quetiapine 6.1 kg
• Olanzapine 8.5 kg
• Placebo .20 kg

• Stimulant use does not prevent weight gain
• AP combination worsens weight gain
• Mood Stabilizers worsen weight gain
Antipsychotic Medication Adverse Effects: Prolactin Related AE

Characteristics

- Levels not closely correlated with symptoms
- AP dose dependent; may normalize over time; resolves once AP is discontinued
- Aripirazole may decrease prolactin levels especially in boys and prepubertal status
- Don’t routinely screen
- Adverse effects drives blood levels

Intervention

- DA agonist – bromocriptine, amantadine, caberoline
- Partial agonist – Aripirazole
- Switch drugs
Antipsychotic Medication Adverse Effects: Cardiac and miscellaneous AE’s

1. Dizziness/Orthostatic Hypotension:
   - Alpha 1 blockade
   - Additive effects if co-administering alpha-2 agonist or B-Blocker
   - Quetiapine – higher risk at doses > 300mg due to alpha-2 occupancy

2. QTc Prolongation:
   - Case reports of QTC . 430 msec with ziprasidone
   - Dose independent
   - Clinical significance unclear

3. Myocarditis:
   - Case reports with Clozapine

4. Dizziness/Orthostatic Hypotension:
   - Usually dose dependent except Quetiapine > 300 mg
   - Children > Adolescents > Adults