Acute Emergencies in Behavioral Health Patients

Allyson Witters Cundiff, MD
Child and Adolescent Psychiatry
Vanderbilt University Medical Center

Disclosures

Sponsored Research Disclosures
• Ovid Therapeutics
• Curemark
• Roche
• Stemina
• NIH

Some of the discussion related to medications will be for “off label” use
Quick Hits

- Drug Reactions
  - Dystonic Reaction
  - Serotonin Syndrome
  - Neuroleptic Malignant Syndrome (NMS)
- Catatonia
- Suicide Attempts
- Self-injurious Behavior
- Autism Spectrum Disorder
- The Agitated Patient

Goals and Objectives

- Identify and manage drug reactions
- Be aware of potential dangers of catatonia
- Assess risks for suicidal behavior
- Understand self-injurious behavior
- Learn nonpharmacologic and pharmacologic treatments for agitation in the hospital
Why Do We Care?

- Peds clinics: 1 in 5 kids
- ~10% of ED visits
- Hospitalization rate up 80%
- Boarders
- Depression $$$
- 50% drop out of high school

Psychiatric Patients

- Higher 30 day readmission rate
- LOS in ER:
  - 18.2 hours psych patients
  - 5.7 hours non-psych patients
- Risks while boarding:
  - Symptom exacerbation
  - Increased anxiety/agitation
  - Elopement → self harm, suicide
  - Increased ancillary resource utilization (officers or sitters)
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Dystonic Reaction

*Acute sustained painful muscular contraction*

- Blepharospasm
- Tongue protrusion
- Jaw/neck contractions-torticollis
- Back muscles-opisthotonos
- Oculogyric crisis-symmetrical or unilateral upward lateral movement
- Laryngeal dystonia→sudden death

Dystonia

- If due to antipsychotics (DA blockade):
  - 90% Occur within 4 days
  - 100% occur by day 10
Dystonia: Higher Risks

- Male
- <35yo
- African American Descent
- High Potency Agent
- High Dose
- IM route
- Cocaine
- Neurological Disorder

Treatment

- IV antihistaminergic or anticholinergic agents

- Diphenhydramine 1.25mg/kg/dose IV/IM + oral treatment for duration of half-life of antipsychotic
- Or-
- Benztropine 1-2mg IM/IV with complete resolution within 30 min; repeat with 2nd dose if not complete resolution of symptoms

- *Benztropine reportedly resolves symptoms in less time than Diphenhydramine
A Famous Case

1984, an 18-year-old college freshman died in New York Hospital. Libby Zion was admitted for agitation, confusion, and muscular twitching. She had a history of depression and was taking phenelzine, an MAO inhibitor. The house officers assigned to her care sedated her with meperidine and haloperidol and placed restraints to prevent self-harm. By the following morning, she had a fever of 107 and died from cardiac arrest.

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Mental Status Changes
- Confusion
- Agitation
- Lethargy
- Coma

Autonomic Instability
- Hyperthermia
- Tachycardia
- Mydriasis
- Diarrhea/Vomiting

Neuromuscular Hyperactivity
- Hyperreflexia
- Hyperkinesia
- Myoclonus
- Trismus

Serotonin Syndrome
- Symptoms can range from mild to severe (death)
- Incidence ~15% of overdoses of SSRIs
- Onset is quick: 3-6 hours
- Most resolve within 24 hours
- Muscle pain and weakness can last for months
Agents That Can Cause Serotonin Syndrome

• **MAOIs**: tranylcypromine, phenelzine, isocarboxazid, moclobemide, nialamide, iproniazid, clorgiline, and toloxatone (antidepressants); pargyline and selegiline (antiparkinsonian agents); procarbazine (antineoplastic); linezolid and furazolidone (antibiotics); Syrian rue (harmine and harmaline—various uses)

• **SSRIs**: fluoxetine, sertraline, paroxetine, fluvoxamine, citalopram, escitalopram

• **SNRIs**: venlafaxine, duloxetine, milnacipran

• **Tricyclic and other antidepressants**: clomipramine, imipramine, trazodone

• **“Mood stabilizers”**: lithium, valproate, risperidone, olanzapine

Agents That Can Cause Serotonin Syndrome

• **Opiates**: meperidine, fentanyl, methadone, tramadol, dextromethorphan,

• **Antimicrobials**: ritonavir, Linezolid

• **Antiemetics**: ondansetron, granisetron, metoclopramide

• **Antihistamines**: chohrphenamine, brompheniramine

• **Antimigraine drugs**: “triptans”

• **Supplements/herbal products**: L-tryptophan, 5-hydroxytryptophan, Hypericum perforatum (St. John's wort), ginseng

• **Stimulants**: amphetamine, 3,4-methylenedioxymethamphetamine ("Ecstasy")

• **Psychedelics**: lysergic acid diethylamide, 5-methoxy-dimethyltryptamine
Serotonin Syndrome Treatment

- Discontinue Meds
- Supportive Care (ABCs)
- Cooling Blankets
- Treat Tachycardia + HTN
- Benzos for Anxiety
- Cyproheptadine

Quiz Time!

- All of the following can be associated with serotonin syndrome except:
  - 1) diarrhea
  - 2) hyperthermia
  - 3) delirium
  - 4) “lead pipe” rigidity
  - 5) hyperreflexia
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Neuroleptic Malignant Syndrome (NMS)

• Dopamine blockade
• Develops 2-10 Days
• Mental status changes
  – Agitation, delirium, coma
• Bradyreflexia

• Mnemonic
  – F – Fever
  – A – AMS
  – L – Leukocytosis
  – T – Tremor
  – E – Elevated enzymes (elevated CPK) - 100% cases
  – R – Rigidity of muscles

Neuroleptic Malignant Syndrome (NMS)

• Mortality ~10%
• Tetrad:
  – AMS
  – Hyperthermia
  – Rigidity (“Lead Pipe“)
  – Autonomic Instability: \(\uparrow HR, RR \uparrow \downarrow BP\)
NMS

- **Typical antipsychotics**: pimozide, droperidol, haloperidol, fluphenazine, trifluoperazine, thiothixene, perphenazine, loxapine, molindone, mesoridazine, thioridazine, chlorpromazine
- **Atypical antipsychotics**: clozapine, olanzapine, risperidone, quetiapine, ziprasidone, aripiprazole
- **Other dopamine blockers**: metoclopramide, prochlorperazine, promethazine

Risk Factors for NMS

- Long Acting Agent
- High Potency Antipsychotic
- Neurological Disorders
- Malnutrition
- Dehydration
Treating NMS

- Discontinue meds
- Circulatory and respiratory support (ICU)
- Treat hyperthermia
  - Cooling blankets
  - Ice packs to axilla
- Dantrolene for muscle rigidity
- Bromocriptine
- Benzodiazepines for agitation
- ECT

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Catatonia

Features of Catatonia

- Echolalia
- Change in responsiveness
- Mutism
- Repetitive movements
- Autonomic instability
- Agitation
- Posturing
- Waxy flexibility

CATATONIA
Catatonia Comorbidities

- Bipolar disorder
- Schizophrenia
- ASD/PDD
- ID
- PTSD
- OCD
- Tic Disorder

- Medical or Neurological Conditions ~25%
Catatonia: Organic Causes

- Medications/toxins
  - Antipsychotics
  - Steroids
  - Lead
- Neurological
  - TBI
  - Encephalitis
  - Seizure disorders
  - CVA

- Medical illness
  - Addison’s, Cushing’s
  - Lupus
  - Vitamin deficiencies
  - Malaria
  - Pheochromocytoma

Life-threatening Catatonia

- Fever and Autonomic Abnormalities
- Coma
- Death
Catatonia

- Identify underlying causes
  - Labs: CBC, CMP, thyroid function tests, ANA, inflammatory markers, heavy metals, infectious disease workup, ammonia, iron panel
  - Lumbar puncture, NMDA receptor Ab in CSF
  - Urine porphyrins, homocysteine levels
  - U/A, urine toxicology
  - Ultrasound pelvis
  - Cranial imaging
  - EEG

Catatonia: Treatment

- Identify underlying cause
- Benzodiazepines
  - Test dose Lorazepam 1-2mg IM: response within 30 min
- NMDA antagonists
- ECT
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Increase in Suicide in US

- **24%**
- Males and females
- **Females ages 10–14yo**
- Males ➔ Firearms
- Females ➔ Poisoning
- **Suffocation**
- 2nd leading cause of death
Mechanisms of Suicide

- Firearms > Suffocation (Hanging) > Poisoning
- Suicide attempts not increasing
- Method more lethal
- Hanging has doubled in past 15 years

Suicide Trends

- ~20% of teens have ideation
- Higher in rural areas (nearly double)
- 11.9 per 100,000 in rural areas
- 6.5 per 100,000 in urban counties
  - social isolation
  - economic
  - firearms
  - limited mental health and ED access
Suicide Risk Assessment

- Females → Attempt
- Males → Complete
- Adolescents
- Access to weapons
- Current/recent SI
- Plans/Intent
- Attempts

- Self injury
- Substance abuse
- LGBT
- Depression
- Mixed affect/mania
- Insomnia
- Anxiety
- Psychosis

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Risk/Protective Factor</th>
<th>Suicidality</th>
<th>Possible Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Psychiatric Disorders w/ severe sx; acute precipitating even</td>
<td>Potentially lethal suicide attempt or persistent ideation with strong intent</td>
<td>Admission; suicide precautions</td>
</tr>
<tr>
<td>Moderate</td>
<td>Multiple risk factors; few protective factors</td>
<td>SI w/ plan but no intent</td>
<td>Possible admission; crisis intervention</td>
</tr>
<tr>
<td>Low</td>
<td>Modifiable risk factors; strong protective factors</td>
<td>Thoughts of death, no plan/intent</td>
<td>Outpt referral; give emergency/crisis number</td>
</tr>
</tbody>
</table>

https://www.samhsa.gov
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Self-Injurious Behavior (SIB)

• Intentional self-inflicted damage
• Not usually suicidal intent
• Relief
• Interpersonal difficulty
• Positive feelings
• Boredom
Self-injurious Behavior
Most Common Methods

- Skin cutting (70-90%)
- Head banging or hitting (21%-44%)
- Burning (15%-35%)

How Common is SIB?

- 15% of teens report some form of self-injury
- ~50% of adolescents on inpatient psych unit
- College students 17%-35%
Treating SIB

- Ensure not SI
- Treat underlying psychiatric comorbidity (mood disorder, trauma)
- Limits with medications (SSRI → Atypical antipsychotics → Lithium)
- Avoid Benzos
- DBT (Dialectical Behavior Therapy)

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ASD

• Aggressive SIB: head-banging, hand-biting, and excessive self-rubbing and scratching
• Aggression towards others
• WHY:
  – Change in routine
  – Medical ailment
  – Puberty

Medical Comorbidity

• Constipation (meds or poor nutrition- Pica)
• Seizures (25-33% risk)
• Ear infections
• Dental infection
• Sleep problems, sleep apnea
• Undetected injuries
• UTI
• HA, other source of pain
• GERD
ASD

After ruling out medical etiology:
• Comorbidities
• Medication Adjustment
• Therapies (Applied Behavioral Analysis ABA)
• Inpatient Psych- very low yield
• Residential Treatment Center (RTC)

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Causes of Aggression and Agitation in the ED

- Disruptive Behavior Disorders
- Anxiety-provoked Aggression
- ID/ASD
- Organic Delirium
- Schizophrenia
- Mania
- Abuse/Neglect
- Substance use

Helpful Reminders When Dealing with Difficult Kids

- Victims of abuse 4x more likely to develop personality disorders
- Underlying psychiatric disorder
- ED can be threatening/anxiety-provoking
- Approach with compassion → Adherence
Guidelines for Treatment of Agitation

• Clearly introduce yourself; assure pt you are there to keep him/her safe; this is your job
• Use simple language, soft voice, slow movements
• Keep your distance
• Relaxed Body Language
• Maintain privacy and respect, nonjudgmental attitude, active listening, remain engaged
• Address hunger, thirst, comfort, warmth and pain
• Give choices when available (choice of drink)

Guidelines for Treatment of Agitation

• Offer distracting toys, sensory modalities
• Explain what comes next
• Discuss restraint and offer reward for calm behavior
• Reduce environmental stimuli (dim lights, reduce noise, redirect traffic)
• Remove access to breakable objects
• Prepare with staff for the next step if calming strategies fail
  - do med calculations
• Engage consultants: SW, Psych, security
• Consider need for physical restraints
• Prepare algorithm for pharmacological management
Meds for Agitation

- Should only be used when safety a concern
- To calm, not to cause sedation/sleep
- Not for punishment
- Involve patients
- Consent/Assent
- Oral preferred to IM or IV
- Check your own anger/frustration before restraining

Medications Used for Pediatric Agitation

1. Antihistamines
2. Benzodiazepines
3. Typical Antipsychotics
4. Atypical Antipsychotics
Antihistamines

• Diphenhydramine or Hydroxyzine
• Familiar
• Paradoxical reactions
• Not without side effects
• Especially useful if underlying anxiety

Benzodiazepines

• Lorazepam, Midazolam, Diazepam
• Lorazepam 0.05-0.1mg/kg/dose (usually 1-2mg) PO/IM/IV
• Main side effects: sedation and respiratory depression
• Paradoxical reactions (disinhibition): DD, impulse control problems, ASD, ID, LD
Antipsychotics

- Atypical > typical
  1. Risperidone
  2. Olanzapine
  3. Ziprasidone

- Side effects:
  - Fatigue
  - HA,
  - CV changes
  - increased appetite
  - metabolic syndrome
  - weight gain
  - hyperglycemia
  - dyslipidemia
  - NMS

Recommended Dosages of Antipsychotics for Treatment of Pediatric Acute Agitation (6-18 years)

<table>
<thead>
<tr>
<th>Medication</th>
<th>Oral</th>
<th>Intramuscular</th>
<th>Intravenous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haloperidol</td>
<td>0.01-0.03mg/kg/day</td>
<td>1-3mg/dose up to four times daily</td>
<td>0.5-5mg/dose in up to four times per day*</td>
</tr>
<tr>
<td>Risperidone</td>
<td>0.25-0.5mg mg/day oral liquid or ODT</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Olanzapine</td>
<td>2.5-5mg/day oral tablet or ODT</td>
<td>5mg/dose in children 10mg/dose in adolescents</td>
<td>NA</td>
</tr>
<tr>
<td>Ziprasidone</td>
<td>Not recommended</td>
<td>5mg/dose in children 10mg/dose in adolescents</td>
<td>NA</td>
</tr>
</tbody>
</table>
Caution!

- IM Olanzapine + Lorazepam → Respiratory depression and hypotension

Finding options

- NAMI
  - http://www.nami.org
- Website for psychiatric and substance abuse resources
  - http://findtreatment.samhsa.gov/
- Referral agency for residential treatment
  - http://www.kidlinknetwork.com/
THANK YOU!

References


• https://www.cdc.gov/nchs/products/databriefs/db241.htm


References

• Sonnier, L., Barzman, D. Pharmacologic management of acutely agitated pediatric patients. *Pediatric Drugs* 2011, 13(1).