



MCPAP Clinical Conversations: Medical Monitoring of Psychiatric Medications

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Outline

- Introductions
- Discussion of Format
- Presentation
- Comments and Questions (15-20 mins)

Medical Monitoring of Psychiatric Medications

- Which medications need the most monitoring?
- Monitoring the major risk – Cardiovascular and Insulin Resistance
- Communication and collaboration monitoring with other prescribers

Psychotropic Med Monitoring

- Stimulant medication
- Alpha-Agonists
- SSRIs, and Antidepressants
- Second Generation Antipsychotics
- Lithium
- Anti-seizure medications (Valproic Acid, carbamazepine)

Case Vignette

- Abbey is a 15yo teen with a hx of ADHD/ODD who had been on stimulants by her PCP through grade school and where discontinued upon transition into High School as she had been doing well. She had an emotionally labile first year and academic decline.

Case Vignette Cont.

- She was hospitalized 4 mos ago, started on citalopram 40mg for school and social anxiety, and olanzapine 10mg for “Bipolar” concerns, and clonidine 0.1mg for insomnia. She has an outpatient team of a therapist and psychiatrist. As 10th grade starts she has been restarted on Adderall.

Yearly PE of Established MH Pts

- Role of Primary Care?
- Physical and Wellness assessment
- Updating Problem List
- Updating Medication List
- Communication Lines with Providers
- Metabolic Syndrome Risk
- Medication Monitoring

Case Vignette - PE

- Abbey is seen and reports rocky but ok start of 10th grade.
- Problem List is Updated
- Mental Health Screen – PHQ-9 score is 12 – Moderate
- Psych history of the last year has been updated

Case Vignette - PE

- Therapist and Psychiatrist names and contact numbers updated
- Allergy list updated – pt tells you she had a rash when Lamotrigine was tried
- Vital Signs – HR 66; BP 138/77; Ht 60in, Wt 140lbs
- Exam- well healed old parallel cuts on forearm, and faint resting tremor

Case Vignette

- Meds to Monitor
 - SSRI (Citalopram)
 - Second Generation Antipsychotic (Olanzapine)
 - Alpha Agonist (clonidine)
 - Amphetamine (Adderall)
- ? Of Metabolic Syndrome
- How often to monitor patient receiving mental health care?

Metabolic Syndrome

- Cluster of factors that assist with cardiometabolic risk (athrosclerosis and diabetes type 2)
- Adult risk is defined as 3 out of 5 risk factors of central adiposity, elevated triglycerides, decreased HDL-C, elevated blood pressure, and hyperglycemia.
- Children less consensus but still very useful for medication monitoring

Metabolic Monitoring Parameters

Table 3 – Metabolic risk markers

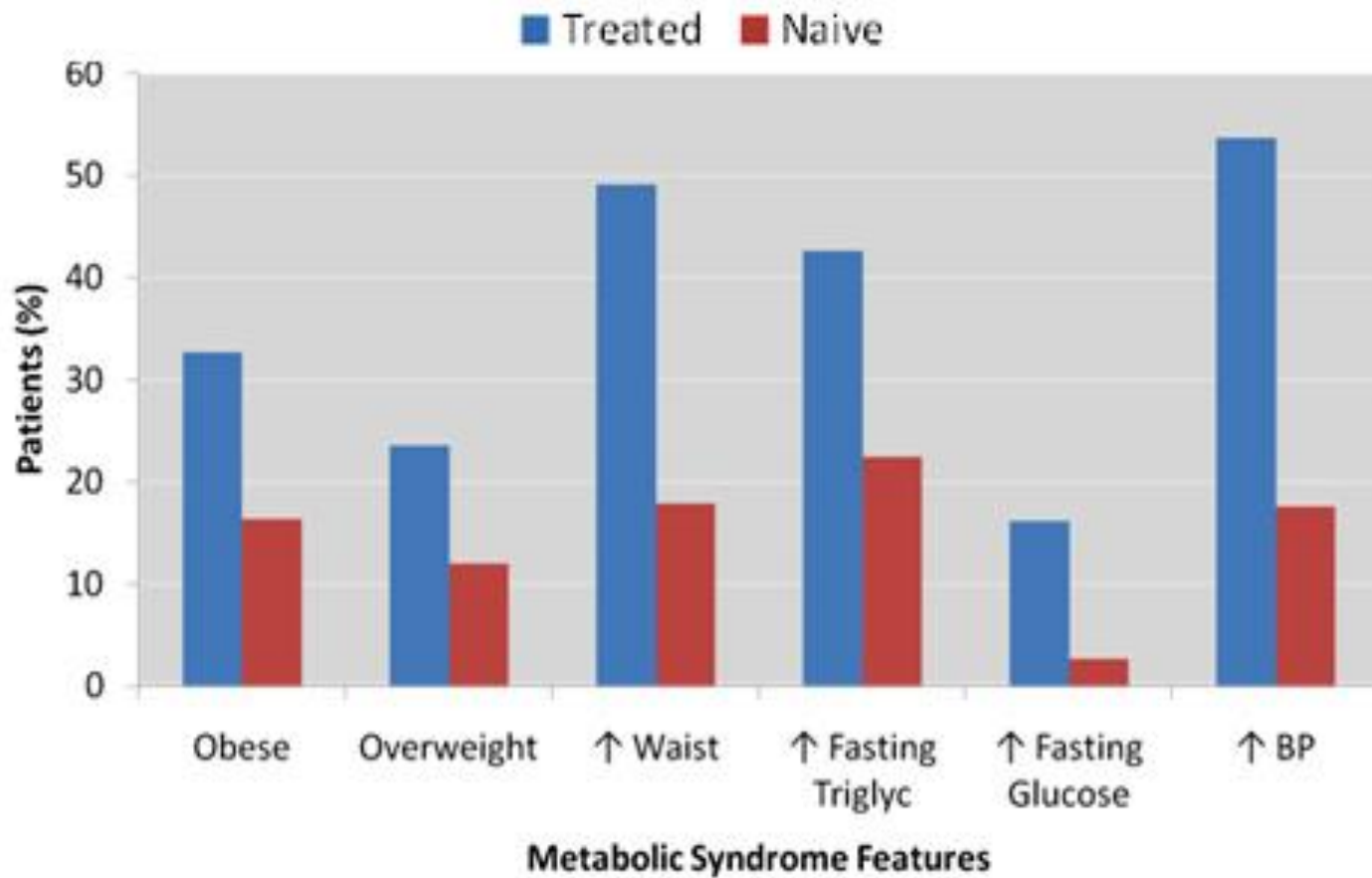
| Prediabetes¹⁸ | Criteria |
|--|--|
| Impaired fasting glucose | 100 - 125 mg/dL (5.6 - 6.9 mmol/L) |
| Impaired glucose tolerance | 2-hour plasma glucose 140 - 199 mg/dL (7.8 - 11 mmol/L) |
| Prediabetic hemoglobin A _{1c} | 5.7% - 6.4% |
| Metabolic syndrome (any 3)¹⁹ | Criteria |
| Waist circumference | Men > 40 inches; women > 35 inches |
| Fasting triglycerides | ≥ 150 mg/dL |
| Fasting HDL cholesterol | Men < 40 mg/dL; women < 50 mg/dL |
| Fasting glucose | ≥ 100 mg/dL or medication treatment |
| Blood pressure | ≥ 130/85 mm Hg or medication treatment |
| Obesity²⁰ | Criteria |
| Class 1 | BMI 30 - 34.9 kg/m ² |
| Class 2 | BMI 35 - 39.9 kg/m ² |
| Class 3 (severe obesity) | BMI ≥ 40 kg/m ² |
| HDL, high-density lipoprotein; BMI, body mass index: wt(kg)/ht(m ²). | |

Metabolic Syndrome

| Criteria/components | Age | | |
|-------------------------|---|--|--|
| | From 6 to 10 years | From 10 to 16 years | > 16 years |
| Definition of adiposity | WC \geq P90 | WC \geq P90 | WC \geq 90 cm (boys) or \geq 80 cm (girls) |
| Glucose metabolism | No defined cutoff value for the diagnosis of metabolic syndrome | Fasting glucose \geq 100 mg/dL | Fasting glucose \geq 100 mg/dL |
| Dyslipidemia | No defined cutoff value for the diagnosis of metabolic syndrome | TGs \geq 150 mg/dL or HDL-C \leq 40 mg/dL or ingesting ALD | TGs \geq 150 mg/dL or HDL-C \leq 40 mg/dL (boys) or \leq 50 mg/dL (girls) or ingesting ALD |
| Hypertension | No defined cutoff value for the diagnosis of metabolic syndrome | SBP \geq 130 or DBP \geq 85 mmHg or ingesting AHD | SBP \geq 130 or DBP \geq 85 mmHg or ingesting AHD |

Abbreviations: WC, waist circumference; TGs, triglycerides; HDL-C, high-density lipoprotein cholesterol; ALD, antilipidemic drug; DBP, diastolic blood pressure; SBP, systolic blood pressure; AHD, antihypertensive drug.

Rates of Metabolic Syndrome in Atypical Antipsychotic Treated and Naive Patients



Panagiotopoulos C, et al. AACAP 2009. Abstract 3.40.

Metabolic Monitoring Parameters

Table 1 – Metabolic monitoring parameters based on American Diabetes Association/
American Psychiatric Association consensus guidelines¹

| | Baseline | Week 4 | Week 8 | Week 12 | Every 3 months thereafter | Annually |
|--|----------|--------|--------|---------|---------------------------|----------|
| Medical history ^a | X | | | X | | X |
| Weight (BMI) | X | X | X | X | X | X |
| Waist circumference | X | | | X | | X |
| Blood pressure | X | | | X | | X |
| Fasting glucose/hemoglobin A _{1c} | X | | | X | | X |
| Fasting lipids | X | | | X | | X |

^a Personal and family history of obesity, diabetes, hypertension, and cardiovascular disease.

Metabolic Monitoring Parameters

- Rarely is monitoring going to be straight forward
- PCP Monitoring
 - Medical hx/ family hx
 - Exam – waist circumference
 - BP
 - Labs- Fasting glucose/HBA1C, Lipid panel

Common Related Concerns

- Poly Cystic Ovary Disease
- Nonalcoholic Fatty Liver Disease
- Obstructive Sleep Apnea
- Musculoskeletal pain and joint injuries

SGA Monitoring

- Wt gain
- Blood glucose dysregulation
- Dyslipidemia
- Blood Dyscrasias
- Gynecomastia
- Blood pressure (hypo or hyper)
- Movement Disorders

Case Vignette

- Abbey is seen 6mos latter and has been lost to outpatient psychiatry. She has been on citalopram 60mg.

General Principles

- During medication initiation follow-up in person or phone ideally within 2 weeks
- Monthly Follow-up (or more) until symptom improvement or stable on medication
- Rating Scales at baseline and at follow-up visits helpful for tracking

General Principles of Maintenance

- “Dose Adjustment” -
 - follow-up – 2-4wks until improved or stable
- Avoid changes during times of patient schedule changes or routine disruptions
 - (start of school, moves, medical illness)
- Change one medication or dose at a time
- Stable Maintenance
 - follow-up every 3 to 4 mos

Suicidal Ideation Screening

The literature calculates the risk of suicidality in children and adolescents taking an SSRI to be low: 1% to 2% of children experience the emergence of suicidal thoughts and behaviors but not completed suicides.^{60,61} The highest risk is seen during the first 9 days of treatment and with higher than usual starting doses

Case Vignette

- Abbey is on elevated dose of Citalopram of 60mg
 - Cardiac History is benign
 - Normal exam
 - EKG – nl sinus rhythm, mild tachycardia
 - QTc 420mm (nl for children is 350 – 460)

Prolonged QTc

- Multiple psychiatric medications potentially increase QTc and add increase in QTc with other medications and antibiotics
 - Antipsychotics, SSRIs, SNRIs, and TCAs
- Risk of Torsade de Pointes risk increases as QTc increases
 - overall still rare

Psychotropics Associated with QTc Prolongation

Table 2. Psychiatric Drugs With a Higher Risk of QTc Prolongation at Therapeutic Doses

| Drug Class | Drug Name |
|-------------------------|--|
| Typical antipsychotics | Thioridazine, haloperidol, chlorpromazine, pimozide |
| Atypical antipsychotics | Ziprasidone, iloperidone, quetiapine |
| SSRIs | Citalopram, escitalopram |
| TCAs and TeCAs | Amitriptyline, imipramine, maprotiline, nortriptyline, desipramine, clomipramine, trimipramine |
| SNRIs | Venlafaxine |
| Other antidepressants | Mirtazapine |

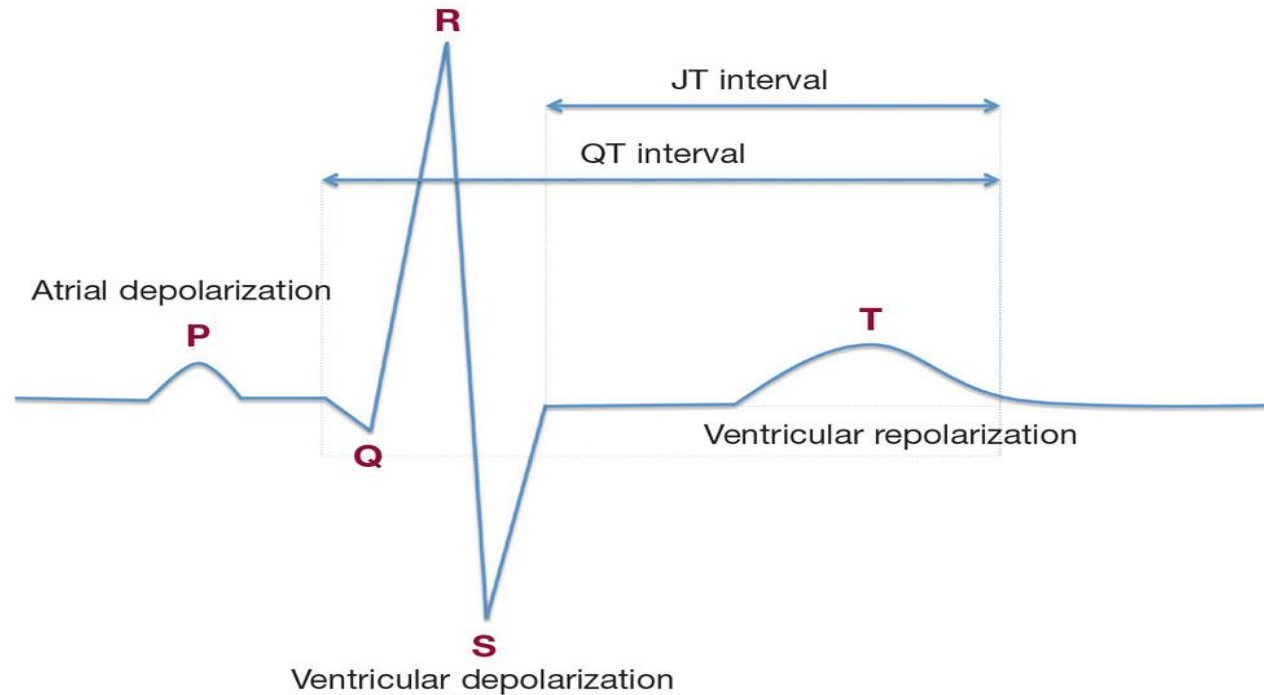
QTc: corrected QT; SNRI: serotonin norepinephrine reuptake inhibitor; SSRI: selective serotonin reuptake inhibitor; TCA: tricyclic antidepressant; TeCA: tetracyclic antidepressant.

Source: References 2-12, 14-18, 24.

Cardiac Health Assessment

- Known Cardiac Dx (ie Prolonged QT Syndrome)
- Family hx of arrhythmia or SCD
- Hypokalemia
- Cardiac Symptoms
- Unexplained Syncope or palpitations

EKG Monitoring



Note: The T wave is the best representation of ventricular repolarization in the cardiac myocyte, which highlights why the JT interval may be the most appropriate monitoring parameter for torsades de pointes.

EKG monitoring for QTc

- Baseline EKG, measurement of QTc
- <460mm
- Repeated EKG following initiation of medication in 1-2wks
- Repeated EKG for any dose increase >50%
- EKG for any Cardiac symptoms or clinical concerns

Awareness of other possible complications

Serotonin Syndrome

Serotonin syndrome

Rapid onset

Combination of 2+ serotonin agonists



Mental status changes

Agitation
Pressured speech



Autonomic instability

Tachycardia
Diarrhea
Shivering
Diaphoresis
Mydriasis



Neuromuscular abnormalities

Clonus
Hyperreflexia (lower > upper)
Tremor
Seizure

Rx

Benzodiazepines
Hydration/Cooling
Cyproheptadine

TABLE – SELECTED DRUGS ASSOCIATED WITH SEROTONIN TOXICITY

| Antidepressants | Opioids | Triptans | Drugs of Abuse | Miscellaneous |
|--|---------------|--------------|----------------|------------------|
| Monoamine Oxidase Inhibitors (MAOIs) | Meperidine | Sumatriptan | Cocaine | Linezolid |
| Tricyclic Antidepressants (TCAs) | Fentanyl | Rizatriptan | Amphetamines | Dextromethorphan |
| Selective Serotonin Reuptake Inhibitors (SSRIs) | Pentazocine | Zolmitriptan | MDMA (Ecstasy) | Lithium |
| Serotonin-norepinephrine reuptake inhibitors (SNRIs) | Buprenorphine | | | Tryptophan |
| St. John's Wort | Tramadol | | | L-Dopa |
| Bupropion | | | | |
| Trazadone | | | | |

SSRI Discontinuation

- Abrupt discontinuation may cause “flulike” symptoms
 - agitation, dizziness, feeling “spaced out,” lightheadedness, drowsiness, poor concentration, nausea, headache, and fatigue. These effects can be reversed by resuming the preceding SSRI dose and tapering at a more gradual rate

Lithium Monitoring

Table 2 Recommendations for monitoring patients on lithium

| Parameter | Investigation | When to monitor |
|----------------------|--|---|
| Lithium | Plasma lithium concentrations* | Monitor closely for first few days and aim to achieve concentrations within the therapeutic range Monitor every 3-6 months for long-term lithium use |
| Renal function | Urea and creatinine | Baseline then at 6 months |
| | Electrolytes | Baseline then annually |
| Thyroid function | Thyroid stimulating hormone concentrations | Baseline then at 6 months |
| | | Annually for long-term lithium use |
| Parathyroid function | Calcium concentrations | Baseline then annually |
| Weight | Waist circumference, body mass index | Baseline then annually |

Adapted from guidelines from the International Society for Bipolar Disorders.¹¹ More frequent investigation may be required if clinically indicated or a change in mood state is observed.

* In the event of acute toxicity (>2 mmol/L), lithium should be ceased immediately and haemodialysis can be used to reduce lithium in the blood

Neurological Side Effects

- Akathesia (extreme restlessness)
- Extrapyrarnidal Symptoms
 - Parkinsonian Symptoms (tremor, rigidity, and slow movements)
 - Dystonia (sustained muscular contractions – frequently neck, but any part of body)
 - Tardive Dyskinesia (late-onset involuntary movements, may not be reversible)

Questions and Comments