Medication Management: ADHD

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Samuel H. Zinner, M.D.
Developmental/Behavioral Pediatrics
University of Washington

ADHD - Etiology

- Neurobiology
  - Neurotransmitters
    - Norepinephrine
    - Dopamine
    - Others

ADHD - Comorbid conditions

- Learning Difficulties/Learning Disabilities
- Oppositionality and Conduct problems
- Aggressive Outbursts
- Tic Disorders
- Anxiety Disorders
- Mood Disorders
- Developmental Coordination Disorder
- Substance Abuse

ADHD - Treatment

- NIMH Multimodal Treatment Study of ADHD (MTA Study)
  - Four groups:
    1. Community Care (CC)
    2. Medication Management (MedMgt)
    3. Behavioral (Beh)
    4. Combination (Comb)
  - Results:
    - Comb & MedMgt superior to Beh and CC for ADHD
    - Comb superior to MedMgt, Beh and CC for other areas

ADHD - Treatment

MTA Study

– **Treatment Approach Rules Of Thumb:**

- ADHD-only or ADHD/CD-ODD ⇒ MedMgt +/- Comb
- ADHD/Anxiety-only ⇒ MedMgt, Beh or Comb
- ADHD/Anxiety/CD-ODD ⇒ Comb

ADHD - Treatment

- Medications
  - To address core ADHD features
  - To address comorbid features

ADHD – Treatment
Key points for medications

- Medication is an integral *part* of treatment.
- Medication is not used for controlling behavior.
- Eyeglasses as an analogy
- Success is attributed to oneself, not to medication
- Avoid “poly-pharmacy” when possible

ADHD - Treatment

- Medications for core ADHD features
  - Psychostimulants
  - Non-psychostimulants

ADHD - Treatment

Core ADHD features:

- Impulsivity
- Inattention
- Hyperactivity
- Distractibility

ADHD - Treatment

Psychostimulants

- First used in 1937
- They do not increase one's stimulation
- Very effective
- When ineffective after adequate trial, reconsider the diagnosis

ADHD – Treatment

Psychostimulants

- Advantages
  - the most effective Rx option for core ADHD features
- Disadvantages
  - little direct effect on social skills or academics
  - may cause attention overfocusing
  - potential for abuse
  - side effects

ADHD - Treatment

Psychostimulants – Key Points

- "START LOW, GO SLOW"!!
- IF ONE DOESN'T WORK, TRY ANOTHER!!
- IF INEFFECTIVE WITH PROPER TRIAL, RECONSIDER DIAGNOSIS!!

ADHD - Treatment

Psychostimulants – Key Points

- Long-acting and short-acting available
- Sometimes will use long- and short-acting together
- Consider double-blind, placebo-controlled trial
- Effect is “immediate”

ADHD - Treatment

Psychostimulants – Key Points

- If sudden loss of efficacy, not likely due to medication failure
- Usually should take medication 7 days/week
- ADHD is lifelong, and medication may or may not be a continued part of management
- Periodic trials without medication are suggested
- Less likely to abuse drugs as adolescents

ADHD - Treatment

Psychostimulants – Side effects

- Usually mild and short-term
- Appetite reduction
- Sleep difficulty
- “Rebound”
- Headache
- Stomachache
- Possible growth impact
- Possible cardiovascular side effects
- They DO NOT cause tics or Tourette syndrome!!!

ADHD – Treatment

Medications for core ADHD features

Psychostimulants

• Methylphenidate	Ritalin [LA,SR], Concerta [Metadate CD,ER], Methylin [ER]
• Dexmethylphenidate	Focalin
• Dextroamphetamine	Dexedrine [Spansule], Dextrostat
• Mixed amphetamine salts	Adderall [XR]
• Pemoline	Cylert

Non-psychostimulants

ADHD – Treatment

Medications for core ADHD features

Psychostimulants

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Non-psychostimulants

ADHD – Treatment

Medications for core ADHD features

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Non-psychostimulants

ADHD – Treatment

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Non-psychostimulants

ADHD – Treatment

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Non-psychostimulants

ADHD – Treatment

Medications for core ADHD features

Psychostimulants

Non-psychostimulants

- Norepinephrine Reuptake Inhibitor
- Alpha adrenergic agonists
- Antidepressants
- Anticonvulsants/Mood stabilizers
- Neuroleptics

ADHD – Treatment

Medications for core ADHD features

Non-psychostimulants

Advantages

- May avoid psychostimulant side effects
- May be used with stimulants for effect augmentation or dose reduction
- Many treat comorbid conditions of ADHD

Disadvantages

- None works as well as psychostimulants (uncertain re: Strattera)
- All have side effects

ADHD – Treatment

Medications for core ADHD features

Non-psychostimulants

NE Reuptake Inhibitor

- atomoxetine (Strattera)
  - No abuse potential (not a controlled substance)
  - Few studies comparing atomoxetine with psychostimulants
  - Appetite suppression is most common side effect
  - No cardiovascular effects
  - Usually once daily dosing

ADHD – Treatment

Medications for core ADHD features

Non-psychostimulants

Alpha adrenergic agonists

- clonidine (Catapres) *(Esp. useful if used with stimulant)*
- guanfacine (Tenex)

ADHD – Treatment

Medications for core ADHD features

Non-psychostimulants

Antidepressants

- tricyclics *(The most studied non-stimulant for ADHD)*
- SSRIs
- others

ADHD – Treatment

Medications for core ADHD features
Non-psychostimulants

Antidepressants

- tricyclics ("TCAs") *(Patience!! 3 weeks for full effect)*
  - imipramine (Tofranil)
  - nortriptyline (Pamelor)
  - amitriptyline (Elavil)
  - clomipramine (Anafranil)
  - protriptyline (Vivactil)
  - desipramine (Norpramin)
- SSRIs
- others

ADHD – Treatment

Medications for core ADHD features

Non-psychostimulants

Antidepressants

- tricyclics
- SSRIs *(Ineffective for ADHD, but great for comorbidity)*
  - fluoxetine (Prozac)
  - sertraline (Zoloft)
  - paroxetine (Paxil)
  - fluvoxamine (Luvox)
  - citalopram (Celexa)
- others

ADHD – Treatment

Medications for core ADHD features

Non-psychostimulants

Antidepressants

- tricyclics
- SSRIs
- others
  - buproprion (Wellbutrin) *(The only established one for ADHD)*
  - venlafaxine (Effexor)
  - mirtazapine (Remeron)
  - nefazodone (Serzone)

ADHD – Treatment

Medications for core ADHD features

Non-psychostimulants

Anticonvulsants/Mood stabilizers *(effective, but not advised)*

- Carbamazepine (Tegretol)
- Lithium
- Valproic acid (Depakote)

ADHD – Treatment

Medications for core ADHD features

Non-psychostimulants

Neuroleptics *(effective but inadvisable)*

- Risperidone (Risperdal)
- Olanzapine (Zyprexa)

ADHD – Treatment

Medications for comorbid features

- Tics/Tourette's
- Insomnia
- Aggression
- Anxiety/Obsessions-Compulsions
- Mood disorders
- Enuresis (wetting)

ADHD – Treatment

Medications for comorbid features

- Tics/Tourette's
  - Stimulants
  - Alpha adrenergic agonists
  - Neuroleptic agents
    - atypical neuroleptics
    - typical neuroleptics
  - Add a beta-blocker
  - TCA

ADHD – Treatment

Medications for comorbid features

- Insomnia
  - Alpha adrenergic agonists
  - TCAs

ADHD – Treatment

Medications for comorbid features

- Anger/Aggression
  - Anger: SSRI
  - Aggression: clonidine or carbamazepine

ADHD – Treatment

Medications for comorbid features

- Anxiety/Obsessions-Compulsions
  - Anxiety: SSRIs and TCAs
  - Obsessions-Compulsions: SSRIs

ADHD – Treatment

Medications for comorbid features

- Mood Disorders
  - Depression: SSRIs, Buproprion, and TCAs

ADHD – Treatment

Medications for comorbid features

- Enuresis (wetting)
  - TCAs
  - DDAVP

ADHD – Treatment

Non-medication approaches

- Complementary and Alternative Therapies
  - Guidelines from the National Institutes of Health
    - Assess the safety and effectiveness of the therapy
    - Examine the practitioner's expertise
    - Consider the service delivery
    - Consider the costs
    - Consult your healthcare provider

ADHD – Treatment

Non-medication approaches

- "Alternative" approaches
  - Dietary eliminations
  - Biofeedback/Hypnotherapy
  - Chiropractic
  - Homeopathy
  - Herbs and dietary supplements

ADHD – Treatment

Non-medication approaches

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  - Homeopathy
  - Herbs and dietary supplements

ADHD – Treatment

Non-medication approaches

- "Alternative" approaches:
  - Herbs and dietary supplements
    - Safety
    - Classes of agents
      - Sedative herbs and supplements
      - Antioxidant supplements
      - Other popular herbs and supplements

ADHD – Treatment

Non-medication approaches

- "Alternative" approaches:
  - Herbs and dietary supplements: Classes
    - Sedative herbs and supplements
      - Valerian
      - Lemon balm
      - Kava kava
      - Melatonin
    - Antioxidant supplements
    - Other popular herbs and supplements

ADHD – Treatment

Non-medication approaches

- "Alternative" approaches:
  - Herbs and dietary supplements
    - Sedative herbs and supplements
    - Antioxidant supplements
      - Fish oil
      - Pycnogenol (grape seed and pine bark)
    - Other popular herbs and supplements

ADHD – Treatment

Non-medication approaches

- "Alternative" approaches:
  - Herbs and dietary supplements
    - Sedative herbs and supplements
    - Antioxidant supplements
    - Other popular herbs and supplements
      - Ginkgo biloba
      - Evening primrose oil
      - Blue-green algae

ADHD RESOURCES: Medication Information

- Children and Adults with ADHD (CHADD)
  - www.chadd.org
- Nat'l Initiative for Children's Healthcare Quality (NICHQ)
  - www.nichq.org
- National Institute of Mental Health (NIMH) – ADHD Q&A
  - www.nimh.nih.gov/publicat/adhdqa.cfm
- NICHQ ADHD Toolkit
  - www.nichq.org/resources/toolkit

ADHD - Treatment

TAKE-HOME POINTS

- Comprehensive management is needed
- Medications are likely useful
- Stimulants generally the best first choice
- Efficacy of any medication is unpredictable
- Don’t overlook comorbid conditions