Physical Symptoms
Clinical Manifestations

• Symptoms:
  • Cold intolerance
  • Postural dizziness and fainting
  • Early satiety, abdominal bloating, discomfort and pain
  • Constipation
  • Fatigue, muscles weakness and cramps
  • Poor concentration
Anorexia Nervosa (AN) DDx:

- Hyperthyroidism: tachycardia, heat intolerance
- Addison’s Disease: hyperpigmentation, hyperkalemia
- Diabetes: Poly – Uria, - dypsia, - phagia
- Pituitary dysfunction
- Inflammatory Bowel Disease (IBD): most often diagnosis found if an underlying process is there. Remember joints, ESR, CRP, other labs, etc.
- Malignancies, SLE, or Malabsorption syndromes
- Pubertal Delay: can mimic AN or in fact can be from AN
Labs You Want

• CBC with diff
  ➢ Low Hb
  ➢ Low WBC with starvation

• Thyroid Function (although Rarely Helpful)

• ESR Should be NORMAL (If not, think IBD or other organic etiology)

• EKG
  ➢ Bradycardia and prolonged QTc

• Electrolyte/CMP
  ➢ Low potassium, high bicarb - frequent vomiting or use of diuretics
  ➢ Nonanion gap acidosis – laxative abuse
  ➢ Hyponatremia - excess water intake
  ➢ Hypophosphatemia
  ➢ Hypomagnesemia
  ➢ Hypocalcemia
  ➢ BUN high in starvation
  ➢ Elevated LFTs
Complications
Gastrointestinal Complications

- Dysmotility - Delayed gastric emptying and constipation
- Fatty liver changes
- Pancreatitis
- Superior Mesenteric Artery Syndrome
- Refeeding Syndrome
Hematologic Complications

• 21%-39% of AN patients are anemic
• 22-75% of AN patients are leukopenic
• Cytopenias due to bone marrow failure
Cardiac Complications

- Bradycardia
- Arrhythmia
- Hypotension
- Prolonged QT
- MVP
• Morbidity and Mortality due to arrhythmia

• Heart is atrophic

• Decreased cardiac output
Bone Health

- 50-90% have osteopenia
- 20-50% have osteoporosis
- Males=Females
- Life long risk of fractures
• Amenorrhea due to hypogonadotrophic hypogonadism
• Atrophy of testes and breast tissue
• Long term fertility can be compromised
Neurologic Complications
Management of Anorexia Nervosa
Multidisciplinary Approach to Care Supporting the Patient and Family

Medical Care, Emotional care (therapy, psychiatry) and Nutrition

- PCP
- Patient + Family
- Dietician
- Therapist Psychiatry
• Family-based therapy is effective first-line tx
  - Focused on empowering parents/caregivers to the principal resource for effectively changing the eating disorder behavior
# Level of Care for Eating Disorders

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 5</td>
<td>Hospital in-patient&lt;br&gt;Short-term&lt;br&gt;Crisis stabilization</td>
</tr>
<tr>
<td>Level 4</td>
<td>Residential in-patient&lt;br&gt;Long-term care: 24 hours a day treatment</td>
</tr>
<tr>
<td>Level 3</td>
<td>Partial hospitalization program/day program&lt;br&gt;5 days a week, 8 hours a day&lt;br&gt;Similar to IOP, but more intensive and tightly structured</td>
</tr>
<tr>
<td>Level 2</td>
<td>Intensive out-patient treatment of 2-3 times week&lt;br&gt;Individual therapy, group therapy, nutrition therapy&lt;br&gt;Possibly support meals</td>
</tr>
<tr>
<td>Level 1</td>
<td>Scheduled appointments with multi-disciplinary treatment team&lt;br&gt;Medical provider, therapist, dietitian</td>
</tr>
</tbody>
</table>
Goal of Management
Initial Management

• Refer promptly for specialized care
  ➢ May be needed immediately

• Follow closely
  ➢ Not in 6 months (like for short stature issues)
  ➢ More like in 1-2 wks! Kids decompensated rapidly

• **Initiate weight gain or stop purging behaviors**
  ➢ If NOT an Eating Disorder, the patient will NOT need “expert” advice here. But, if they can NOT initiate gain/stop behaviors, and you have ruled out other diagnosis, then... this is an Eating Disorder.
AN and Psychopharmacotherapy

• There are no medications shown to treat the symptoms of AN.
• There is no evidence supporting the use of atypical neuroleptics for the symptoms of AN. SSRI’s should not be used unless there are other clear co-morbid diagnoses which preceded the AN, and weight restoration is well underway.
• Follow evidence based research when prescribing for co-morbid diagnoses in the context of AN.
Indications for Hospitalization

• Severe Malnutrition (Weight < 75% of IBW)
• Heart Rate < 45 bpm
• EKG, abnormal/QTc >460
• Orthostatic BP/HR
• Hypothermia (<36)
• Hypokalemia (<3) or other electrolytes abnormalities
Continue: Indications for Hospitalization

• Severe mental health disturbance, suicidal ideation or Co-Morbid condition
• Acute food refusal
• Failure of outpatient management
Bulimia Nervosa
Bulimia Nervosa

• DSM V Criteria for Diagnosis:
  • Recurrent Episodes of Binge eating
  • Recurrent inappropriate compensatory behaviors in an attempt to prevent weight gain
  • The binge-eating and inappropriate compensatory behaviours both occur, on average, at least once a week for 3 months.
  • Dissatisfaction with body shape and weight
  • The disturbance done not occur exclusively during episodes of anorexia nervosa
Clinical Features
Bulimia Nervosa
Behaviors

• Binging
  • Rapid consumption of large amount of high calorie food in a short period of time
  • Sense of loss of control over eating

• Purging
  • Self-induced vomiting, laxative abuse, diuretics, excessive exercise, prolonged fasting, under-dosing of insulin (for those with DM)

• Binge-Purge cycles

• Frequently weighing

• Preoccupation with food

• Overly concerned with food, body, weight, shape and size
Things to ask about

• Frequent trips to the bathroom, particularly after eating
• Signs/smell of vomit
• Packages of laxatives or diuretics
• Disappearance of food
• Presence of empty wrappers and containers
• Eating in secret
• Stealing, hoarding or hiding food
Things to look for

• Growth Chart - usually normal or fluctuations in weight
Things to look for

• Skin Changes- Calluses on the dorsum of the hand
Things to look for

- Enlarged Salivary Glands—commonly parotid glands, usually bilateral and painless
Things to look for

• Dental Enamel Erosion- usually occurs in the lingual, palatal and posterior surfaces of the teeth

Symptoms to ask about

- Fatigue and Weakness
- Muscle cramps
- Normal or irregular menses
- Bloating
- Nausea
- Chest pain and heartburn
- Easy bruising (from hypokalemia/platelet dysfunction)
- Bloody diarrhea (suspected laxative abuse)
Evaluation

• Complete history and Physical Examination

• Laboratory screening:
  • CBC
  • BUN and creatinine, electrolytes, glucose, calcium, phosphorous and magnesium
  • Serum amylase
  • ECG
  • UA
Treatment

• Multifaceted & Interdisciplinary approach required
• Address biologic, psychological, & social issues
• Medical Intervention - Provider
  • Determine a healthy goal for weight
  • Monitor weight closely
  • Stop episodes of compensatory purging
  • Correct electrolyte imbalances
  • Close monitoring- follow up every 1-2 weeks
Nutritional Intervention

• Involve a dietitian – promote “Healthy eating”
• Recording food intake for AN or # of binge episodes per week in a journal
• Encourage breakfast
• Meal planning & nutritional education
Cognitive-Behavioral Therapy

• First-line therapy for BN in adults
• Improve attitudes about body shape and weight
• Focus on strategies to cope with emotional triggers
• Restructure “thinking errors”- modify abnormal attitudes to eating, body shape and weight
• In adolescents with BN, 39% of those treated with family-based therapy were no longer bingeing or purging compared to 18% receiving supportive psychotherapy
Pharmacologic

• Studies have demonstrated a positive effect of a # of different antidepressants for treating BN
• Fluoxetine- only FDA medication approved for treatment of BN
• Combination antidepressant medication and CBT appears superior to either modality alone.
• The majority of patients with BN can be treated as outpatients
*Myth or Pearl?

Patients with Eating Disorders are sneaky, manipulative, and difficult.

**MYTH!**
*Myth or Pearl?

Adolescents must lose weight to be diagnosed with Anorexia Nervosa.

**MYTH!**
*Myth or Pearl?

Weight loss must be intentional to be diagnosed with Eating Disorder.

MYTH!
Goals

Adolescents have unique developmental needs that impact every facet of their disease

Younger Adolescents ≠ “little Adults”
Diagnostic Challenges of the Younger Patient

• Kids are supposed to Grow!

• Adolescents in puberty gain weight!
  ➢ Change in lean body mass and adipose tissue
  ➢ Bone mineral density increases

• This normal weight gain should continue even after menses start/height should stops

- Neinstein ‘02
*Myth or Pearl?*

Patients don’t get better from Eating Disorders.

**MYTH!**
*Myth or Pearl?

Labs in adolescents with Eating disorders (particularly AN) are almost always normal until very, very, late in the illness.
Do NOT be reassured by “normal” labs

Pearl!
*Myth or Pearl?

Thankfully, morbidity or mortality from Eating Disorders in adolescents are not common or severe.

MYTH!
Female Athlete Triad

The Female Athlete Triad

- Menstrual dysfunction
- Low bone density
- Low energy availability
Female Athlete Triad

HEALTHY Meeting Energy Needs

UNHEALTHY Energy Deficiency

UNHEALTHY No Menstrual Cycles

HEALTHY Normal Menstrual Cycles

UNHEALTHY Low Bone Mass Osteoporosis

HEALTHY Strong Bones
Elements of the Triad

- Menstrual Dysfunction
  - Amenorrhea: absence of menses 3 months or more, primary or secondary
  - Oligomenorrhea

- Etiology
  - Changes in energy availability result in functional hypothalamic amenorrhea (FHA)
  - Changes in GNRH pulsatility → LH pulsatility → estrogen deficiency

- Estrogen deficiency may contribute to decreased bone mineral density
Elements of the Triad

- Low energy availability
  - Energy availability is the amount of dietary energy needed for all physiologic functions after accounting for energy expenditure
  - (Dietary energy intake – physical activity energy expenditure)
- May occur in the presence of or, in the absence of an eating disorder
- Disordered eating without an eating disorder
  - Unknowingly failing to attain their energy requirements secondary to time constraints or lack of nutritional knowledge
  - Studies reveal athletes often lack the appetite necessary to promote compensatory food intake for energy expenditure
Elements of the Triad

• Bone Loss/Osteoporosis
  • Greatest accretion of bone mass happens in puberty
  • Healthy athletes tend to have higher BMD than nonathletic counterparts
  • Assessing bone density in the adolescent or in pre-menopausal woman, Z-scores are utilized
  • Premenopausal women- International society for clinical densitometry has defined a Z-score ≤ -2.0 SD as ‘below expected for age’ and a Z-score > -2.0 SD as ‘within the expected range for age.’
  • American College of sports medicine- premenopausal female athletes
    • Low BMD – Z- score -1 to -2 with secondary clinical risk factors for fractures
    • Osteoporosis- ≤ -2 with secondary clinical risk factors for fracture
Management

• Pre-participation physical exam history- 3 questions that screen for menstrual irregularity

• Diagnosis of FHA associated with inadequate caloric intake in the context of exercise is a diagnosis of exclusion
  • Reduction in training intensity and/or enhanced caloric intake
  • If an eating disorder is suspected- mental health services employed
  • If the athlete’s weight is < 85% of ideal body weight, no exercise unless weight is gained weekly and pt is eumenorrheic
  • Data inconclusive in regards to use of OCP as estrogen replacement

• DXA is most commonly use to assess BMD
  • Assess in women with hx of hypoestrogenism, disordered eating and/or hx of stress fracture
  • Measure spine and hip – young adult women
  • Spine and whole body- adolescents
Treatment

• Primary goal- restoration of regular menstrual cycling and enhancement of BMD
  • 1st step- Modification diet and exercise
    • Increase in body weight that occurs with alteration of diet and exercise and resumption of menses improves BMD in previously amenorrhea pts
  • Athletes are resistant to reductions in training
  • No published longitudinal studies are available on long-term benefits of hormone replacement therapy to slow or reverse the loss of bone mineral density
    • Data on OCPs inconclusive, frequently used for contraception
    • Evidence for use of cyclic estrogen-progesterone has been data extrapolated from use in postmenopausal women
  • Optimize vitamin D and calcium intake- daily dose of 600 IU and 1300 mg
  • Bisphosphonates are not recommended for bone density tx in adolescents or young women
Eating Disorders: Take Home Points

• Great need for provider-awareness (both in mental health and non-mental health)
• Very medically risky!!! Need intense psychological AND medical management! (especially with restricting eating patterns)
• Multifactorial etiology
• Multidisciplinary treatment approach
• Involve the family in treatment whenever you can
• Prevalent in teens, but much less research to guide us in their treatment
• DSM criteria sometimes don’t capture cases which are clinically significant
References


• American Psychiatric Association Guidelines for the Treatment of Eating Disorders

• Anderson AE. The diagnosis and treatment of eating disorders in primary care medicine. 1999


References


• Katzman DK. Unpublished data. Understanding adolescent eating disorders: Updates and new directions. 40th Annual Indiana Child Care Conference, Indianapolis, Indiana, May 2004


Thank You