Medical Caveats Complicating Efforts to Cease Purging in Patients with Bulimia Nervosa

February, 2013

Philip S. Mehler, MD, FACP, FAED
Medical Director, Denver Health
Professor of Medicine & Infectious Disease, University of Colorado
Associate Dean, University of Colorado School of Medicine
Purging

• Three main types
  – Vomiting 70%
  – Laxatives Abuse 20%
  – Diuretics Abuse 10%
Symptoms from Purging

• Vomiting
  – Tooth enamel erosion (*perimolysis*)
  – Caries
  – Hematemesis
  – Esophagitis (*reflux from incompetent LES*)
  – Muscle toxicity from emetics (*cardiac and skeletal*)
  – Volume depletion with dizziness and weakness
  – Hypotension and tachycardia
  – Paresthesias
Symptoms from Purging

- Vomiting
  - Epistaxis
  - Visual “floaters”
  - Oral pain
  - Hygienic issues
Symptoms from Purging

• Laxatives
  – Abdominal pain
  – Constipation
  – Diarrhea
  – Rectal bleeding
  – Volume depletion and dizziness
  – Irreversible cathartic colon syndrome
  – Paresthesias
Symptoms from Purging

• Diuretics
  – Paradoxical edema
  – Volume depletion and dizziness
  – Hypotension and tachycardia
  – Paresthesias
  – Nervous system (headache, seizures)
Why is it Medically Difficult to Cease Purging?

• Psychological
• A predictable constellation of troubling symptoms which ensue with abrupt cessation of purging, regardless of specific mode of purging utilized
• Memories of these uncomfortable medical events are disincentives to cease purging and create angst when it is suggested and contribute to bulimia’s increased death risk of 1.93-
Expectant Treatments for Purging Cessation

(Avoiding failure!)
Purging

• “Pseudo-Bartter’s Syndrome”
  – Consequence of chronic severe volume depletion from loss of fluids via purging of any type
  – Renal up-regulation of aldosterone → an adrenal gland hormone responsible for retention of salt and water to prevent fainting from low blood pressure
    • Upon abrupt stopping of any purging behavior → edema
    • Severely worsened by typical (over) use of IV saline fluids in medical settings to treat low blood pressure, dehydration, hypokalemia and alkalosis
    • Can lead to heart failure, and severe-rapid edema formation due to salt-avid state from elevated aldosterone levels
Renal Effects of Aldosterone

Sodium (Na) is reabsorbed from tubular urine

Potassium (K) moves from bloodstream into tubule and is excreted
• Restoring intravascular volume turns off aldosterone...but this takes **WEEKS**
• Rapid infusion of IVF will result in significant edema formation and weight gain
• Don’t bolus NS in these patients!!
• Replace potassium and magnesium (diuretics)
• Transient use of spironolactone (25-50 mg/day) will help turn off aldosterone, promote potassium retention and prevent edema formation (7-14 days)
Hypokalemia

- Seen in all types of purging disorders
- Finding of significant hypokalemia in an otherwise healthy appearing young woman is highly specific for bulimia nervosa
- Predisposes bulimics to palpitations and cardiac arrhythmias
- The efficacy of potassium repletion is abrogated unless volume is restored and aldosterone turned off.
## Pseudo-Bartter’s Syndrome

- Characterized by hypokalemia and metabolic alkalosis
- Volume depletion plays a central role
- Efficacy of potassium repletion is abrogated unless volume is restored
- Restore volume with IV normal saline slowly (50-70 cc/hour)
- Edema may be alarming to the patient
- Risk dissipates by 2-3 weeks after cessation of purging
Edema of Purging Cessation

**Purging**

**Dehydration**
- Cardiac output
- Effective arterial blood volume
- Renin
- Aldosterone
- Renal Na⁺ reabsorption
- Renal retention of Na⁺ + H₂O
- Plasma volume
- Transudation

**EDEMA**

“Body on Guard”
Idiopathic Cyclical Edema

- Many reports demonstrating that diuretic abuse may actually be the primary factor in initiating some cases
- Reflex edema following their usage due to stimulation of Renin-Angiotensin-Aldosterone system
- Treatment is to taper diuretics, restore volume, restrict salt and be patient
Pathophysiology of Refeeding Edema in Anorexia Nervosa

• Not due to albumin – oncotic pressure
• Hyperinsulinemia → ↑distal tubular sodium reabsorption-retention and antinatriuresis
# Serum Electrolyte Levels in Purging Disorders

<table>
<thead>
<tr>
<th>Purge type</th>
<th>Sodium</th>
<th>Potassium</th>
<th>Chloride</th>
<th>Bicarbonate</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting</td>
<td>Increased, decreased, or normal</td>
<td>Decreased</td>
<td>Decreased</td>
<td>Increased</td>
<td>Increased</td>
</tr>
<tr>
<td>Laxatives</td>
<td>Increased, decreased, or normal</td>
<td>Decreased</td>
<td>Increased or decreased</td>
<td>Decreased or increased</td>
<td>Decreased or increased</td>
</tr>
<tr>
<td>Diuretics</td>
<td>Decreased or normal</td>
<td>Decreased</td>
<td>Decreased</td>
<td>Increased</td>
<td>Increased</td>
</tr>
</tbody>
</table>

*Electrolyte*
Normal Laboratory Electrolyte Ranges

<table>
<thead>
<tr>
<th>Electrolyte</th>
<th>Range (mmol/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicarbonate (HCO₃⁻)</td>
<td>22-28</td>
</tr>
<tr>
<td>Chloride (Cl⁻)</td>
<td>101-12</td>
</tr>
<tr>
<td>Potassium (K⁺)</td>
<td>3.6-5.2</td>
</tr>
<tr>
<td>Sodium (Na⁺)</td>
<td>138-47</td>
</tr>
</tbody>
</table>
Metabolic Alkalosis

• Most common acid/base disturbance seen with bulimics
• Both vomiting and diuretics create a contraction alkalosis secondary to loss of NaCl resulting in intravascular volume depletion
• Laxatives in the acute setting can cause a non-gap metabolic acidosis. With chronic use a mild metabolic alkalosis with severe hypokalemia is more likely
• Bicarbonate >38 is very suggestive of self-induced vomiting
Dehydration

- **Treatment**
  - Frequent cause of morbidity and damage to patient’s trust of medical system
  - **Wrong**: overly fast IV fluid administration causes edema which can become severe
  - **Correct**: slow IV fluid (e.g., NS at 50 cc/hr) only until Na rising, bicarb near normal, BUN falling
  - If needed, admit to 24 hour observation to accomplish slowly rather than push rapid IV infusion tx in ED
  - Small amounts of IV and/or PO potassium
When Stop Purging May Need:

- **General treatment**
  - Gently/slowly replete volume I.V. or less commonly via oral route
    - NS with 20 meq KCL at **50 cc/hr**
    - Until bicarb has normalized, BUN down-trending, and sodium are normalizing which indicates aldosterone levels are back to normal
  - Gentle doses of potassium
    - Oral or I.V, but will be lost in urine if **volume status** not corrected first and its efficacy will be abrogated
  - **Elevate legs**
  - **Low sodium diet** (1-2 gr/day!)
Spironolactone

- Old hypertension medication
- Recent rebirth medically for CHF and hypertension
- Aldosterone antagonist: Rx’s Edema marginally
- May begin it preemptively and maximize effect
- Dose 25-75 mg/day in single dose
- 1-2 week duration
- No rebound edema
- S.E.: gynecomastia, hyperkalemia (unusual in short term)
- Amiloride is alternative
Purging - Vomiting

- Acute sialadenosis
  - “Chipmunk facies”
  - Bilateral swelling of parotid glands three days after cessation of purging via vomiting
Sialadenosis

- Warn
- Sialagouges
- Warm Compresses
- NSAID’s or COX – 2’s
- Pilocarpine (Sialogen)
Purging: Detox

• **Stop** laxatives, diuretics and vomiting
  – Do not taper...risk for cathartic colon syndrome
• Gently/slowly replete volume. Spironolactone 25-50 mg daily x 2 weeks
• Gentle doses of potassium...gut functions best at K of 4.5 mmol/L
• Watch bowel function and treat constipation with non-stimulants (eg polyethylene glycol), use x-ray for objective evidence of retained stool
• Elevate legs at all times. Low sodium diet
• Establish expectations and provide support
Secondary Causes of Constipation

• Dietary factors such as a generally low intake of food, and specifically of fiber
• Inactivity
• Dehydration
• Intestinal obstruction
• Comorbidities such as diabetes mellitus, hypothyroidism, hypercalcemia
• Drugs such as opioids, anticholinergics, antihypertensives, antacids, diuretics, and iron supplements
Constipation

• Treatment
  – Manage **expectantly**, offer osmotic laxatives like polyethylene glycol (1-3x/day)
  – Abdominal x-ray can evaluate objectively how much stool is present
  – If excessive stool, increase medical management. If minimal stool, reassure
  – Replete potassium to 4.5 mEq/L
  – No logic to gradual taper!! (cathartic colon!!)
  – Dispel erroneous beliefs
  – Docusate is useless, but???
Osmotic Safe Laxatives

unique mechanism of action of polyethylene glycol 3350

1. MiraLAX draws water into the colon
2. The water increases stool volume
3. And softens stool to ease passage
Approach to a Patient with Nausea and Vomiting

“I Can’t Stop Vomiting”
Potential Lifestyle Changes for Reflux

- Weight loss in overweight patients
- Elevation of the head of the bed in patients with nocturnal heartburn
- Smoking cessation
- Avoiding large or late meals
- Avoiding certain foods that trigger symptoms. Foods that may decrease lower esophageal sphincter tone include chocolate, alcohol, fatty foods, caffeinated beverages, and peppermint
Gastroesophageal Reflux Disease Treatment Algorithm

Troublesome symptoms consistent with GERD, other conditions unlikely or excluded

- **H2RA or PPI with lifestyle modifications (6-8 weeks)**
  - Success
  - Does reduction and/or discontinuation
    - Success
    - Failure
    - Confirm dosing/adherence
      - Change to alternative agent or increase to bid dosing
      - Success

GERD with alarm symptoms, risk factors for Barrett’s

- GI referral (EGD, manometry/pH monitoring)
  - Failure
  - Success
  - Failure
Esophageal Causes of Persistent Symptoms After an Adequate Trial of PPI Therapy

- Improper dosing of medication
- Nonadherence or noncompliance with treatment
- Nonacidic or bile reflux
- Incomplete acid suppression/acid breakthrough
- Esophageal dysmotility
- Delayed gastric emptying
Conclusion

• Purging behaviors are inherently dangerous
• Ceasing purging behaviors may not be simple
• There are effective treatments to prevent and treat the difficulties associated with purging cessation and heighten chance of success
• Use electrolyte results to guide treatment
• May need referral for more severe or recurrent problem cases
Just Released

Dr. Philip S. Mehler’s New Book