Period Recovery

How to help your client with hypothalamic amenorrhea get their period back for good

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About me

- BS in Nutritional Sciences, Cornell University
- MPH & RD training, UNC Chapel Hill
- Live with my dog Charlie in Charlotte, NC
- Owner & Lead Dietitian, Feed Your Zest Nutrition & Wellness
    - Virtual practice, team of 3, specialize in weight inclusive reproductive health
- Adjunct Professor at Winthrop University
- Love hiking, yoga, baking, and adult ballet classes

Thank you to The Dairy Alliance!

The Dairy Alliance is sponsoring today's talk.
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Overview

- What is hypothalamic amenorrhea?
- Why does HA happen?
- Health risks associated with HA
- Common medical treatments for HA
- MNT for HA
  - Counseling
  - Energy needs
  - Macronutrient distribution
  - Vitamins & minerals of concern
- Functional foods for HA
- Exercise for HA
- Stress and sleep for HA
- Case Study
- Questions

What is hypothalamic amenorrhea?

- **“Absent or irregular menses and estrogen deficiency due to insufficient stimulation or suppression of the HPO axis in the absence of anatomic or organic pathology characterizes FHA”**
- FHA = functional hypothalamic amenorrhea
- Endocrine Society recommends ruling out other genetic, hormonal or anatomical abnormalities before reaching a diagnosis of FHA

Gordon et al 2017

What is hypothalamic amenorrhea?

- Responsible for ⅓ of secondary amenorrhea cases
- Affects 1.62 million women in the United States and 17.4 million women worldwide
- Also referred to as RED-S (relative energy deficiency in sport)
    - RED-S can also occur in males, whereas hypothalamic amenorrhea (HA) is referring to those who have the ability to menstruate

Saadedine, Kapoor & Shufelt 2023

Why does HA happen?

- A combination of caloric restriction and over exercise leads to lack of available energy
  - Usually results in significant weight loss, but can happen at any BMI
  - Body conserves energy for essential organs, stopping production of sex hormones and essentially turns off the reproductive system

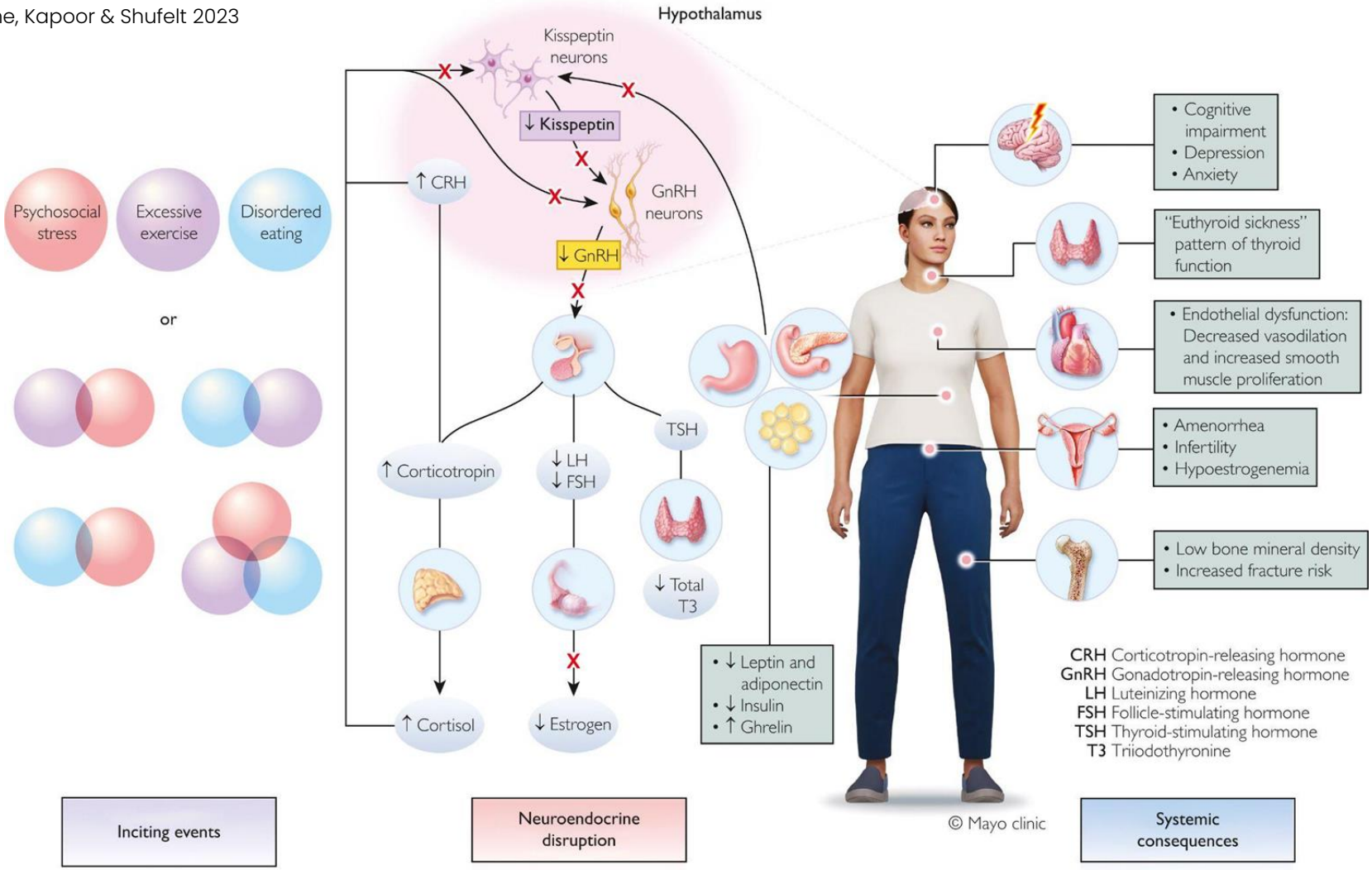
Gordon et al 2017; Saadedine, Kapoor & Shufelt 2023

Why does HA happen?

- Can be a result of an eating disorder, illness, or unintentional underfueling - especially in athletics
- High levels of stress, especially chronic stress and complex trauma, can lead to high cortisol levels which also can inhibit ovulation

Gordon et al 2017; Saadedine, Kapoor & Shufelt 2023

Saadedine, Kapoor & Shufelt 2023



Health Risks associated with HA

- Infertility due to anovulation
- Unplanned pregnancy due to believing one is completely infertile
- Low estrogen levels
  - Increased risk of CVD
  - Slower bone turnover
  - Low libido and vaginal dryness
- Hypothyroidism
  - Cold intolerance, fatigue, difficulty focusing

Gordon et al 2017; Saadedine, Kapoor & Shufelt 2023, Shufelt et al 2023

Health Risks associated with HA

- Osteopenia and osteoporosis
  - Result of low bone turnover w/ low estrogen levels, and often low calcium intake as well
  - Increases risk of fractures especially for athletes
- Nutrient deficiencies due to inadequate intake
  - Footstrike anemia can be worsened by inadequate intake of iron
- Worsened comorbid anxiety and depression
- Psychosocial concerns related to disordered eating and exercise patterns
- **Except for osteoporosis, which is loss of BMD that is no longer reversible, all of these factors can be resolved through medical nutrition therapy**

Gordon et al 2017; Saadedine, Kapoor & Shufelt 2023

Can the pill treat HA?

- Oral contraceptive pills can result in an artificial withdrawal bleed, but this should not be confused with a natural period.
- Ovulation is still not occurring, and evidence shows that **OCPs do not protect the bones.**

Gordon et al 2017

What about hormone replacement therapy?

- Low dose estrogen replacement may help protect bone mineral density, but will not restore menses without correction of energy deficit.
- If menses has not returned after 6-12 months after full weight restoration, estrogen therapy may help modulate cortisol response to help stimulate ovulation

Battipaglia et al 2023

What about the “progestin challenge?”

- Provera, or medroxyprogesterone, is often prescribed to “kickstart” a menstrual cycle for patients with amenorrhea
    - This is can stimulate a withdrawal bleed as it mimics the rise and fall of progesterone that would occur after ovulation, but does not actually stimulate spontaneous ovulation for subsequent cycles

Gordon et al 2017

What about the “progestin challenge?”

- Progestin challenge may help providers evaluate a patient’s estrogen status or other issues contributing to amenorrhea
    - Lack of withdrawal bleed indicates either thin endometrial lining, or outflow tract obstruction
- Quarterly use of progestin may be important to stimulate a bleed for those who have adequate estrogen and a thickened endometrial lining, but are not able to ovulate, so as to reduce the risk of endometrial cancer

Gordon et al 2017

Medical Nutrition Therapy for HA

Goals of MNT for HA

- Restore energy balance to promote any necessary weight restoration, support regular menses, bone mineral density, and other important biological functions
  - Increase caloric intake with balanced macronutrients
  - Reduce amount and intensity of exercise
  - Utilize patient history, growth charts if relevant, and weight at which menses was normal for help in creating a target weight

Gordon et al 2017, Ryterska et al 2021

Goals of MNT for HA

- Correct nutrient deficiencies resulting from restrictive eating pattern
  - Interpret lab results, and counsel on appropriate nutrient dense foods to incorporate or add supplements

Ryterska et al 2021

Goals of MNT for HA

- Correct osteopenia, and support bone mineral density to reduce risk worsening osteoporosis or fracture
  - Calcium, magnesium, vitamin D, and vitamin K
  - When appropriate, strength training twice per week

Gordon et al 2017, Ryterska et al 2021

Goals of MNT for HA

- Support healthy relationship with food, body, and exercise
  - Use counseling techniques such as MI, CBT, ACT, and mindfulness to restore regular eating and exercise patterns, correct health beliefs, and improve body confidence
  - Encourage mindful and intuitive eating skills to reduce needs for structured meal planning

Gordon et al 2017, Ryterska et al 2021

Energy needs and weight restoration for HA

- *Most people with HA will need at least some weight restoration*
  - However, weight science is NOT calories in = calories out; often metabolism is lowered in response to caloric restriction, and increased intake can “add fuel to the fire”
  - Low percent body fat is associated with increased risk of HA

De Souza et al 2017, Gordon et al 2017, Ryterska et al 2021

Energy needs and weight restoration for HA

- Weight restoration goals:
  - Generally, the weight, or weight %ile for adolescents through age 20, at which the client was able to menstruate regularly
  - May need a bit of a “buffer” depending on behaviors at previous time of menstruation, other health factors, age, and fertility goals

De Souza et al 2017, Gordon et al 2017, Ryterska et al 2021

Energy needs and weight restoration for HA

- There is not a threshold of energy availability at which menses is guaranteed to return, but menstrual disturbances are more likely as energy availability decreases

Lieberman et al 2018

Energy needs and weight restoration for HA

- Some anecdotal and clinical evidence shows that at minimum 2500 calories with minimal exercise is required for restoration of menses
  - More may be necessary, especially if patient is unwilling to drastically reduce exercise
- REFUEL study showed that for non-dieting, highly active women with amenorrhea or oligomenorrhea, ~300-350 kcal increase per day was sufficient to restore menses in 64% participants

De Souza et al 2021; Rinaldi, Buckler & Waddell 2019

Energy needs and weight restoration for HA

- Will likely depend on severity of malnutrition
- May be helpful to cross check with a predictive equation
    - Mifflin St. Jeor x activity factor + 500 kcal/day for weight gain

De Souza et al 2021, Rinaldi, Buckler & Waddell 2019

Energy needs and weight restoration for HA

- What about clients with BMI >25?
  - HA may be more common among thin females, but can happen at **any BMI**
    - Amenorrhea occurs in 40-76% cases of “atypical” anorexia (BMI >18.5), vs 71-86% cases of anorexia nervosa (BMI <18.5)
  - High kcal requirements still apply. Predictive equations are less reliable the farther away we get from a “normal” body weight, so use your clinical judgment!
  - May be helpful to start with 2500 kcal and increase from there vs using MSJ.

Walsh, Hagan & Lockwood 2022

Energy needs and weight restoration for HA

- How long do patients need to consume a high Kcal diet?
  - It depends! At minimum 1-2 months after restoration of menses, which may take up to 1 year depending on severity of malnutrition and adherence to plan.
  - Reliable hunger and fullness cues often return in this time period, and may replace the need for a structured meal plan.
  - Athletes may need to continue or even increase during training and competition/performance seasons

Macronutrient Distribution

- Adequate carbohydrate and fat intake are of particular importance in sending signals to the hypothalamus that energy balance is being restored
- Ideally:
  - 50-55% kcal from carbohydrates
  - 30-35% kcal from fat
  - 15-20% kcal from protein

Ryterska et al 2021

Fiber & Fluid

- ~25-35 g fiber per day
  - Higher end may not always be beneficial d/t increased fullness levels. Treat constipation with other interventions.
- Fluid: ~1 mL/kcal or minimum 64 oz/day + more as needed (use patient thirst or urine color as indicators).
  - Any non-caffeinated, non-alcoholic fluid counts, and often caloric beverages may be very useful in meeting calorie and micronutrient needs!

Micronutrients - Assessment

- Multiple micronutrient deficiencies can occur, depending on patient's individual micronutrient metabolism and what has been restricted.
- Use labs to check vitamin and mineral status:
  - Complete blood count: can indicate iron and B-vitamin deficiency anemias
  - Check serum folate and B12 if results show megaloblastic anemia
  - Ferritin: indicates body stores of iron

Ryterska et al 2021

Micronutrients - Intervention

- Use labs to check vitamin and mineral status:
  - 25-hydroxy-vitamin D: ideal level is around 40-50 ng/dL.
  - **DEXA bone scan:** Shows bone mineral density, which may indicate need for calcium & magnesium rich foods and/ or vitamin D + K/ magnesium supplementation
    - Calcium & magnesium serum levels are tightly controlled by the kidneys and parathyroid gland, and abnormalities require follow up with a PCP.

Ryterska et al 2021

Micronutrients - Intervention

- B vitamin deficiencies:
  - B12 rich foods (cow's milk products, eggs, fish, meat, and poultry), or supplement if this isn't enough/client is vegan
  - Folate rich foods (beans, greens, whole grains, fortified grains, orange juice) + women's multivitamin or prenatal vitamin with folate

Ryterska et al 2021

Micronutrients - Intervention

- Osteopenia/porosis
  - Calcium: Best supported by meeting the RDA (1000 mg/day) with calcium-rich foods (cow's milk, yogurt and cheese, soy milk, tofu, dark green leafy vegetables, sardines). 2-3 servings dairy/day works very well.
  - Focus on foods first:
    - Gut can only absorb up to 500 mg calcium at a time
    - Supplements may interact with certain drugs or have a risk of low stomach acid

Ryterska et al 2021, US Department of Health and Human Services 2024

Micronutrients - Intervention

- Osteopenia/porosis
  - Vitamin D: Adequate intake of 400 IU/day may not be enough for many people, but ensure adequate intake of vitamin D-rich foods (fortified cow's milk and soy milk, eggs, fatty fish).
    - Mild deficiency/less than ideal levels: 2000 IU/day to maintain levels.
    - Moderate deficiency: 4-5000 IU/day until corrected, may need to continue but can trial 2000 IU maintenance.
    - Severe deficiency: 10000 IU/day for 1 month, then 5000 IU daily. Recheck levels in 3 months and decide if 5000 IU or 2000 IU makes the most sense for maintenance.
  - Ensure adequate fat intake.

Holick et al 2011, Ryterska et al 2021

Micronutrients - Intervention

- Osteopenia/porosis
  - Vitamin K: Part of a well-rounded eating pattern, present in many foods, especially fermented dairy products.
  - Supplementation is helpful for protecting against calcification of soft tissue when supplementing 5000+ IU/day vitamin D.
  - Ensure adequate fat intake.

van Ballegooijen et al 2017, Ryterska et al 2021

Micronutrients - Intervention

- Osteopenia/porosis
  - Magnesium: Magnesium-rich foods may be adequate (beans, greens, nuts, seeds, chocolate)
  - Supplementation can be helpful especially for high levels of vitamin D supplementation or if client presents with other symptoms of magnesium deficiency (constipation, headaches, muscle cramps, difficulty sleeping)
    - Supplement up to 350 mg/day with magnesium glycinate for those without constipation, or magnesium citrate for those with constipation.

Ryterska et al 2021

Micronutrients - Intervention

- Iron deficiency:
  - May be caused by footstrike anemia; reduce high impact PA
  - Iron rich foods
    - Heme: liver 1x/week, red meat & dark meat of poultry, oysters, sardines
    - Non-heme (pair with vit c): lentils, beans, dark green leafy vegetables, dark chocolate
  - Check for over-consumption of coffee/tea, or more than 3 servings/day high calcium foods (find balance with bone health)
  - Cook in cast iron

Ryterska et al 2021

Functional foods for HA

- Dairy
  - Lower risk of anovulatory infertility seen among women who consume full fat dairy
  - Increase in live birth rate correlated with increase in total dairy intake among women over 35 seeking fertility treatment
- Phytoestrogens
  - Act as a gentle form of estrogen in the body, seem to improve pregnancy rates
  - Whole soy (tofu, tempeh, edamame, miso, soy milk), ground flax

Chavarro et al 2007, Afeiche et al 2016, Gaskins et al 2019, Mumford et al 2014

Herbal Remedies for HA

- **Caution w/ estrogen sensitive conditions like endometriosis or certain cancers**
- Vitex/chaste tree berry
  - Can provide a boost of progesterone and estrogen
  - Not a replacement for weight restoration
- Maca root
  - Can help with stress tolerance and provide a gentle estrogen boost
  - Not a replacement for weight restoration or mental health therapy

Hudson & Northroop 2008

Putting it all together: The Meal Plan

- Many ways to put together a meal plan, but most important factors:
  - Provide structure
  - Encourage consistent, balanced meals & snacks
  - Avoid numbers
- My favorite: Rule of 3s
  - **Nutrition Counseling in the Treatment of Eating Disorders by Marcia Herrin and Maria Larkin** (2013, Routlege Press)

period Recovery Meal plan

"Rule of Threes"
3 meals and 3 snacks with no longer than 3 hours between eating times.

Eating this often, or this much, might sound overwhelming. Our bodies need adequate amounts of food, in a variety, consistently throughout every day. We will work together to meet your body's basic needs! The next page reviews suggestions for each food group.

Breakfast
Calcium
Complex Carbohydrates
Fruit or Vegetable
Protein
Fat

Snack

Lunch
Calcium
Complex Carbohydrates
Fruit or Vegetable
Protein
Fat
"Fun Food"

Snack

Dinner
Calcium
Complex Carbohydrates
Fruit or Vegetable
Protein
Fat
"Fun Food"

Snack

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Adapted from Food Planning: Rule of Threes *in* **Nutrition Counseling in the Treatment of Eating Disorders** *by Marcia Herrin.*

Suggestions & Serving Sizes

Calcium suggestions
Milk, regular yogurt, frozen yogurt, ice cream (1 cup)
Greek yogurt, cottage cheese (6 oz)
Cheese (1 slice, 1 stick, or 1/4 cup)
Tofu (1/4 block)

Complex carbohydrate suggestions
Cereal, crackers, chips, rice, potatoes, pasta, corn (1 cup)
Bagel, burrito size tortilla (1 whole)
Bread slices, dinner rolls, toaster waffles, taco size tortilla (2 whole pieces)

Fat suggestions (Use liberally! May be incorporated in fried foods or baked goods)
Butter, margarine, oil, mayonnaise, cream (2 tsp)
Nut butter, cream cheese, salad dressing, sauces with cream/oil (1-2 Tbsp)
bacon, nuts and seeds, olives, avocado (1/4 cup)

Fruit or vegetable suggestions
Whole fruit (1 medium)
Berries, grapes, chopped melon, raw veggies (1 cup)
Cooked or canned fruit or veggies, juice (1/2 cup)
Dried fruit (1/4 cup)

"Fun food" suggestions (No serving size, have fun! Or, 1/2 serving more of carb)
Any dessert, cookies, cake, ice cream, pudding, pastries, chips, fries, non-diet soda

Protein suggestions
Meat, fish, poultry, tempeh, seitan (3 oz, about the size of a deck of cards)
Eggs, cheese slices/sticks (2 whole)
Cottage cheese, Greek yogurt, beans (1 cup)
Nuts, tofu (1/2 cup)
Nut butters (2 tablespoons)
Protein powder (1 scoop)

Snack suggestions
Choose 2-3 items: Calcium, complex carbohydrates, fruit, protein, fat, "fun food"

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Adapted from Food Planning: Rule of Threes *in* **Nutrition Counseling in the Treatment of Eating Disorders** *by Marcia Herrin.*

Exercise

- Over-exercise is related to suppression of sex hormones independent of energy availability
  - Likely due to increased activation of HPA axis
- Reducing intensity, duration, and frequency of movement is very effective in supporting return of menses
  - It is possible to get a period with high intensity exercise, but difficult and may not be possible for everyone at beginning stages of recovery

Lieberman et al 2018; Rinaldi, Buckler & Waddell 2019; Gordon et al 2017

Exercise

- However, exercise can be beneficial in moderation
  - Can help with mental health, appetite, and bone strength (if kcals increase)
  - Low impact, light intensity movement kept at ~150 min/week
    - Heart rate <60% max
    - Walking, easy bike ride, yoga (not hot)
  - Light strength training twice per week, short duration
    - Hand weights, body weight, resistance bands
  - NOT fasted, NOT while sick or injured, NOT on too little sleep

Quesnel et al 2023; Hakimi & Cameron 2017; Rinaldi, Buckler & Waddell 2019

Exercise

- In counseling, focus on:
  - Listening to body cues
  - Moving away from all-or-nothing mentality
  - Reducing compulsivity
  - Encouraging coping skills other than exercise (refer to mental health therapist)

Herrin & Larkin 2013

Stress & Sleep

- People with hypothalamic amenorrhea may be physiologically more sensitive to stress
    - High cortisol levels reduce the body's ability to produce adequate sex hormones

Gordon et al 2017

Stress & Sleep

- In addition to reducing exercise and increasing frequency of meals + snacks, reduce cortisol by:
  - Reducing life stress
  - Using mindfulness to move away from perfectionism around food, body & exercise
  - Mental health therapy, coping skills
  - Improving social connections (especially around food!)
  - 8-10 hrs/sleep

Gordon et al 2017

Case Study

SCAN ME

Case Study

Jessica is a 29 y/o Mexican-American female with hypothalamic amenorrhea. Patient reports that she has always been very active, got her first period a little late (14 y/o) and it was never very regular. Jessica was a competitive soccer player all through high school and college. She was always fairly aware of her body size, but restrictive eating did not become an issue until her sophomore year of college. Jessica went through a break up and a death in the family at the same time she began taking advanced level courses. Restriction gave her a sense of control, and her weight dropped around 15-20 lbs. She stopped getting her period, but a doctor said this was “normal” for athletes, and put her on birth control. Jessica shifted in and out of restriction after college, and came off of birth control 1 year ago after she got married in hopes of starting to try and conceive in 1-2 years. Her period never returned. She no longer plays soccer, but has taken up running, riding her peloton, hiking, and hot yoga. She has gained about 5 lbs since college and weighs herself every other day. She is worried about her bone health, as her mother and grandmother both have osteoporosis. Jessica has a difficult time allowing herself to eat higher calorie meals, and restricts fats and “processed carbs.” She has mild lactose intolerance, but has been avoiding all dairy as she recently heard that it is “inflammatory.” Jessica presents to you for help with getting a regular cycle and eventually getting pregnant.

Case Study

- Labs & anthropometrics:
  - Estrogen and progesterone low
  - Vitamin D normal
  - Ferritin low
  - Hgb low
  - BMI 20

- 24 hr recall
  - 7 am: coffee with sugar free creamer
  - 10 am: apple
  - 12 pm: “healthy burrito:” low carb tortilla with avocado, black beans, greens, chicken
  - 4 pm: banana
  - 5 pm: 5 mile run after work
  - 6 pm: protein shake (sugar free pea protein + water)
  - 7:30 pm: big salad with greens, cucumber, tomato, onion, chickpeas, topped with salmon, homemade balsamic vinaigrette
  - 10 pm: 1 square dairy free dark chocolate

Case Study

- What is Jessica doing well?
- What are the red flags?
- Does Jessica need to gain weight?
- What would you suggest Jessica add or swap to her day of eating?
- What exercise suggestions do you have for Jessica?

Wrapping it up

Hypothalamic amenorrhea results due to a combination of undereating, over-exercise, and/or mental stress. Medical nutrition therapy is the primary intervention for patients with HA. The registered dietitian can support return of menses through counseling to decrease exercise, increase consistency & adequacy of caloric intake, correct nutrient deficiencies, balance macronutrient intake, and improve relationship with food, body and exercise.

Questions?

Feel free to email me:
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