The role of Diet in the life of patients living with Neuroendocrine tumors

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Objectives

- Provide a Brief overview of Neuroendocrine tumors and Symptoms related to nutrition among NET survivors.
- Identify a healthy diet for patients based on symptoms.
- Application of foods into diet and provide resources
- Summarize the importance of diet adjustments when needed to improve quality of life.

Effects of NET and GI Consideration

- Over expression of hormones including serotonin and other peptides
- Altered GI structure, function and motility
- Organ involvement and surgical procedures
- Mediation and treatment

Basic Mechanisms Responsible for Clinically Significant Diarrhea

- Osmotic diarrhea
- Secretory diarrhea
- Decreased contact time / surface area
- Probable combination of the above

Contributing Factors of Osmotic Diarrhea

- Malabsorption such as lactose intolerance
- Ingestion of poorly absorbed substrates such as: sorbitol, mannitol, Epson salt or antacids
- Diarrhea will stop

Contributing factors to Secretory Diarrhea

Intestinal water secretion water exceeds absorption
Bacterial toxins
Drugs (laxatives, some types of asthma medications, antidepressants, cardiac)
Miscellaneous: heavy metals, organic toxins, and plant products (e.g. arsenic, insecticides, mushroom toxins, caffeine)
Causes of Secretory Diarrhea

- Vipomas: VIP (Vasoactive intestinal peptide)
- Tumor Associated: Secretory Diarrhea
- Gastrinoma: Histamine, Serotonin, Polypeptides

Causes of Non-Secretory Diarrhea

- Short Bowel Syndrome
- Inflammatory Bowel Disease
- Bacterial Overgrowth
- Omega-3 fatty acids
- Celiac Sprue
- Pancreatic Insufficiency

Assessment of Diarrhea Related Problems

- Rapid transit times (30-60 min post-prandial stool)
- Watery explosive stools
- Floating foul stools

Changing Food Into Energy

- Intake calories as:
  - Carbohydrates
  - Proteins
  - Fats
- Results in:
  - Formed stools
  - Runny stools
  - Fatty stools

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Dietary Factors that May Worsen Diarrhea

- Dietary Factor
  - Caffeine
  - Fructose (in quantities surpassing the gut's absorptive capacity)
  - Lactose

- Source
  - Coffee, tea, cola, OTC headache remedies
  - Apple juice, pear juice, grapes, honey, dates, nuts, figs, soft drinks (especially fruit flavored), prunes
  - Sugar-free gum, mints, sweet cherries, prunes
  - Milk, yogurt, soft cheeses

Use of medications to Control Diarrhea and Steatorrhea

- Anti Diarrhea drugs - Imodium, Kapectate
- Tincture of opiate or codeine
- Cholestyramine
- Pancreatic Enzymes
- Probiotics
Factors Resulting in Increased Motility

- Activity
- Stress
- Foods
  - Concentrated sweets
  - Mix solids and liquids
  - Extreme hot or colds
  - Fiber types

Problems associated with Chronic Diarrhea and Malabsorption

- Involuntary Weight loss
  - Inadequate absorption of calories
- Vitamin and mineral losses
  - Fat soluble vitamins, Mg, K
- Uncontrolled stools
- Gas / bloating

Most Prevalent QOL Concerns for NET Patients

Fatigue
Diarrhea
Worry about illness getting worse

Also considered the worst aspects of physical distress and most common reasons for social restrictions

Most prevalent and worst aspect of emotional distress

Most prevalent and worst aspect of physical distress

Frojd et al. Health and Quality of Life Outcomes 2007, 5:18

Review Nutrition Status

- Current weight vs Usual weight
- BMI
- Muscle Mass
- Hand Grip
- CMP, mg, Hgl. Vit D other Vitamins if lab affordable
- NET markers for over expression
- Stools BRACH scale
- Previous surgeries

Characteristics of Steatorrhea

- Excessive excretion of fecal fat
  - Large, greasy
  - Foul smelling
  - Stool floats
  - May see oil droplets
  - Pale stools

Anti-diarrhea Medications

- They treat only the symptoms
- They work by slowing down the movement of the gut
- This allows more time for water to be absorbed which makes the stool less watery
**Probiotics**

- Useful in treating diarrhea related to antibiotic use from bacteria overgrowth
- Helps replace normal flora to the GI tract
- High dosage may increase gas or diarrhea

**Cholestyramine**

- Used when bile salts are thought to play a role in the diarrhea
- Action is to binds bile acids, keeping them from reaching the colon and thereby stopping bile-acid-induced diarrhea
- Common after gallbladder removal or presence of short bowel syndrome

**Cholestyramine**

- It is Not absorbed by the body
- Adverse effects
  - Interaction with medications by reduced effect
  - Constipation, bloating, abdominal pain, irritation of anal area

**Contributing Factors to Steatorrhea**

- Insufficient release of lipase
- Short bowel syndrome
- Gallbladder removal
- Side effect of medications (SMS analogs)

**Pancreatic enzymes**

- Provide lipase and enzymes to aid in digestion of fats, carbohydrates and protein
- Take with feedings
- Adjust dosage with amount of fat in the diet

**A healthy diet for patients based on symptoms**
Adjustments in Diet Improves Stool Output

- Proteins
- Carbohydrates
- Fats
- Fluids

Treatment Plan

- Take medication as prescribed
- Modify diet
- Keep records
- Report problems

Food Groups

Application of foods into diet

- Food Consistency – Changes foods for better tolerances
- Portion Control - Changes in the amounts of foods
- Avoidance of Trigger Foods- Fats, sugars, Amines
Food Labels
- Look For ...
  - Serving Size
  - Calories
  - Fat
  - Sodium
  - Carbohydrates
  - Dietary Fiber

Activity
- 30 to 45 minutes daily
- Eat high protein foods low in fat sources when building muscle
- Adjust times of activity away from meals if diarrhea/steatorrhea
- Increase activity if constipated

Recipes resources
- Cooking with Cancer Dr. Pineda
- Betty Crocker Living With Cancer
- Food for the Fight ACIR
- Eating Well With Cancer

Resources for CAM
- http://www.cancer.net
- http://www.ftc.gov
- http://www.mskcc.org
- http://www.fda.gov

Summary
Nutrition is so important for so many reasons for people living with NETS.

Conclusion
Making a Meal plan with diet adjustments as needed can improve tolerances and symptom control improved quality of life.
Making food choices for a healthy lifestyle can be as simple as using these 10 Tips. Use the ideas in this list to balance your calories, to choose foods to eat more often, and to cut back on foods to eat less often.

1. **Balance calories**
   Find out how many calories YOU need for a day as a first step in managing your weight. Go to www.ChooseMyPlate.gov to find your calorie level. Being physically active also helps you balance calories.

2. **Enjoy your food, but eat less**
   Take the time to fully enjoy your food as you eat it. Eating too fast or when your attention is elsewhere may lead to eating too many calories. Pay attention to hunger and fullness cues before, during, and after meals. Use them to recognize when to eat and when you've had enough.

3. **Avoid oversized portions**
   Use a smaller plate, bowl, and glass. Portion out foods before you eat. When eating out, choose a smaller size option, share a dish, or take home part of your meal.

4. **Foods to eat more often**
   Eat more vegetables, fruits, whole grains, and fat-free or 1% milk and dairy products. These foods have the nutrients you need for health—including potassium, calcium, vitamin D, and fiber. Make them the basis for meals and snacks.

5. **Make half your plate fruits and vegetables**
   Choose red, orange, and dark-green vegetables like tomatoes, sweet potatoes, and broccoli, along with other vegetables for your meals. Add fruit to meals as part of main or side dishes or as dessert.

6. **Switch to fat-free or low-fat (1%) milk**
   They have the same amount of calcium and other essential nutrients as whole milk, but fewer calories and less saturated fat.

7. **Make half your grains whole grains**
   To eat more whole grains, substitute a whole-grain product for a refined product—such as eating whole-wheat bread instead of white bread or brown rice instead of white rice.

8. **Foods to eat less often**
   Cut back on foods high in solid fats, added sugars, and salt. They include cakes, cookies, ice cream, candies, sweetened drinks, pizza, and fatty meats like ribs, sausages, bacon, and hot dogs. Use these foods as occasional treats, not everyday foods.

9. **Compare sodium in foods**
   Use the Nutrition Facts label to choose lower sodium versions of foods like soup, bread, and frozen meals. Select canned foods labeled "low sodium," "reduced sodium," or "no salt added."

10. **Drink water instead of sugary drinks**
    Cut calories by drinking water or unsweetened beverages. Soda, energy drinks, and sports drinks are a major source of added sugar, and calories, in American diets.

Go to www.ChooseMyPlate.gov for more information.