Other Modified Diets

DANA MARBU’

Food Allergies

- Food allergies affect up to 6 to 8% of children under the age of 3 and 5% of adults.
- A food allergy is an abnormal response to a food triggered by the body's immune system.
- It causes the body to produce antibodies called immunoglobulin E (IgE) to fight it.
- Symptoms may be immediate or delayed up to a **few hours** and range from uncomfortable (e.g., hives, stomach upset, eczema,) to life threatening (e.g., swelling of the tongue, closing of the throat, trouble breathing).

Food Allergies

- A **severe** type of reaction is called **anaphylaxis**, commonly known as anaphylactic shock.
- Anaphylactic shock can produce symptoms, in a addition t**o a drop in blood pressure, unconsciousness, and even death.**
- If a severe food allergy exists, an **antihistamine** should be on hand per medical prescription.
- **Epinephrine injection:** increase blood flow, help in decreasing the symptoms.

- **What is Histamine?**

- Histamine is an organic nitrogenous compound involved in local immune responses.
- Regulating physiological functions in the gut and acting as a **neurotransmitter.**
- Histamine is involved in the inflammatory response.
- Histamine is released by **basophils** as an immune response

Food Allergies

- The most common foods that cause problems in children are eggs, milk, and peanuts.
- In adults, the most common foods that cause allergic reactions are shellfish (such as lobster & shrimp), peanuts, tree nuts, fish, and eggs.

- **Eight foods account for 90% of food allergies. Wheat, milk, eggs, fish, shellfish, tree nuts, soy, and peanuts are the most common allergens**.

Food Allergies

- Presently there are no medications that cure food allergies or food intolerances.
- Strict avoidance of the allergy-causing food is the only way to avoid a reaction.
- Reading ingredient labels for all foods is the key to maintaining control over the allergy.

Food Allergies/ Milk Allergy

- Eliminating all milk and milk by-products from the diet is necessary. This includes yogurt, butter, most margarines, cheese, cream, and milk.
- **Milk is an important source of:**

- Ca
- Vitamin A
- Vitamin D
- Riboflavin
- pantothenic acid
- Phosphorus

- Enriched **soy, almond, or rice milk** beverages are good alternative sources of calcium, vitamin A, and vitamin D.
- Alternative sources of riboflavin, pantothenic acid, and phosphorus are found in **legumes, nuts, and whole grains.**

Food Allergies/ Milk Allergy

Table 11.6 Milk Allergy

Artificial butter flavor
Butter, butter fat, butter oil
Buttermilk
Casein
Caseinates (such as ammonium, calcium, magnesium, potassium, or sodium caseinate)
Cheese
Cottage cheese
Cream
Curds
Custard
Ghee
Goat's milk
Half & half
Hydrolysates (listed as casein, milk protein, protein, whey, or whey protein hydrolysate)
Lactalbumin, lactalbumin phosphate
Lactoglobulin
Lactose
Lactulose
Milk (derivative, powder, protein, solids, malted, condensed, evaporated, dry, whole, low-fat, nonfat, skimmed, and goat's milk)
Nougat
Pudding
Rennet casein
Sour cream, sour cream solids
Sour milk solids
Whey (in all forms, including sweet, delactosed, and protein concentrate)
Yogurt

Food Allergies/ Egg Allergy

- Eggs must be avoided **completely**, even if a diagnosis of allergy to only egg whites or egg yolks has been made.
- It is difficult to separate the egg white and yolk from each other completely, without having some **cross contamination.**
- **Eggs provide the diet:**

- Vitamin B12,
- pantothenic acid
- Folate
- Riboflavin
- Selenium
- Biotin.

Food Allergies/ Egg Allergy

- These nutrients can be easily provided by other foods in the diet, such as **whole grains, legumes, and meat products**.
- Reading food labels is crucial. **Egg-free diet** should be followed.

Table 11.7 Egg Allergy

Albumin
Egg (white, yolk, dried, powdered, solids)
Egg substitutes
Eggnog
Globulin
Livetin
Mayonnaise
Meringue
Ovalbumin
Ovomucin
Ovomucoid
Ovovitellin

Food Allergies/ Peanut Allergy

- Peanuts and peanut derivatives need to be avoided.
- **Peanuts provide:**

- Niacin,
- Vitamin E
- Magnesium
- Chromium/ mineral/ decrease insulin resistance.
- Manganese/ reduces inflammation

- A diet with a variety **of vegetables, whole grains, meats, and legumes** will meet these needs as well.

Food Allergies/ Peanut Allergy

- Peanut-Free Diet, you should avoid foods with the ingredients listed.

Table 11.8 Peanut Allergy

Beer nuts
Pesto
Peanut oil
Ground nuts
Mixed nuts
Peanuts
Peanut butter
Peanut flour
Chili sauce
Hot sauce
Egg rolls

Food Allergies/ Tree Nut Allergy

- Tree nuts include almonds, Brazil nuts, cashews, chestnuts, hazelnuts,, pistachios, walnuts and coconut…. Etc.
- Reading food label is crucial.

Table 11.9 Tree Nut Allergy

Almonds
Brazil nuts
Cashews
Chestnuts
Filbert/hazelnuts
Gianduja (creamy mixture of chocolate and chopped toasted nuts found in premium or imported chocolate)
Hickory nuts
Macadamia nuts
Almond paste
Mashuga nuts
Nougat
Nu-Nuts artificial nuts
Nut butters
Nut meal
Nut oil
Nut paste (such as almond paste)
Pecans
Pine nuts
Pistachios
Walnuts
Coconut (FDA identified as a tree nut, October 2006)

Food Allergies/ Fish and Shellfish Allergies

- All species of fish should be avoided if diagnosed with a fish allergy.
- For a **shellfish** allergy such as: Shrimp and Lobster should be avoided.
- Nutrients that are found in fish can also be found in meats, grains, legumes, and oils, therefore substitution should be fairly easy.

- **Foods that contain fish or fish products:**

- Caesar salad
- Caviar/ fish eggs
- Mayonnaise.

Ketogenic Diet

- **Russel Wilder** first used the ketogenic diet to treat epilepsy in 1921.

- For almost a decade, the ketogenic diet was used as therapeutic diet for **pediatric epilepsy** and was widely used until its popularity ceased with the introduction of **antiepileptic agent.**

- The resurgence of the ketogenic diet as a **rapid weight loss formula** is a relatively new concept the has shown to be quite effective, at least in the short run.

Ketogenic Diet

- **Seizure** is a sudden, uncontrolled electrical disturbance in the brain(individual occurrences), when seizures become a consistent problem, this condition is called **Epilepsy.**

- It can cause changes in behavior, movements or feelings, and in levels of consciousness.

- Most seizures last from **30 seconds to two minutes**. A seizure that lasts longer than **five minutes** is a medical emergency.

- The cause of a seizure is **unknown**.

Ketogenic Diet

- **Causes:**
- Nerve cells (neurons) in the brain create, send and receive electrical impulses, which allow the brain's nerve cells to communicate.
- Anything that disrupts these communication pathways can lead to a seizure.
- Some types of seizure disorders may be caused by **genetic mutations.**
- Seizures can happen after a
    - Stroke, Head trauma that causes an area of bleeding in the brain
    - A closed head injury,
    - An infection such as meningitis (fever)
    - Flashing lights, moving patterns or other visual stimulants
    - Lack of sleep
    - Use of illegal or recreational drugs, such as cocaine

Ketogenic Diet

- **Treatment:**

1. **Antiepileptic Drugs (APDs).**

- By decrease membrane excitability/ inhibition.

2. **Surgical therapy**

- Removing a portion of the brain/ non-critical.

- **Despite these therapies, approximately 30% of patients with epilepsy do not have sufficiently controlled seizures and become resistant to drugs**

- **Drug-resistant epilepsy**

Ketogenic Diet

- The ketogenic diet assumes a very high-fat and low-carbohydrate diet, reducing carbohydrate to less as 10% of used energy.
- This restriction triggers a systemic shift from glucose metabolism toward the metabolism of fatty acids yielding **ketone bodies**, such as **acetoacetate and β-hydroxybutyrate** as substrates for energy.
- The ketogenic diet provides sufficient protein for growth and development.
- The ketogenic diet is a **biochemical model of fasting**; which shifts organs to utilize **ketone bodies** as the source to **replace glucose for the brain**

Ketogenic Diet

- **Physiology and Biochemistry**

- Carbohydrates are the primary source of energy production in body tissues.
- Due to reducing intake to less than 50g per day, insulin secretion is significantly reduced and the body enters a **catabolic state**
- **Glycogen** stores deplete.
- **Two metabolic processes** come into action when there is low carbohydrate availability in body tissues: **gluconeogenesis and ketogenesis.**

Ketogenic Diet

- **Gluconeogenesis** is the **endogenous** production of glucose in the body.
- It takes place on the **liver**, from lactic acid, glycerol, and the amino acids alanine and glutamine.
- When glucose availability drops further, production of glucose is not able to keep up with the needs of the body and **ketogenesis** begins in order to provide an alternate source of energy in the form of ketone bodies.
- The stimulus for **insulin** secretion is also low, which sharply **reduces the stimulus for fat and glucose storage.**

- This metabolic state is referred to as "**nutritional ketosis".**

Ketogenic Diet

- The nutritional ketosis state is considered **quite safe,** as ketone bodies are produced in small concentrations without any alterations in blood pH.
- It greatly differs from ketoacidosis, a life-threatening condition where ketone bodies are produced in extremely larger concentrations, altering blood ph to an acidotic state.
- Ketone bodies produce more adenosine triphosphate (ATP) in comparison to glucose, sometimes aptly called a "**super fuel”**.
- 100 grams of **acetoacetate** generates **9400 grams of ATP,** and 100 g of **beta-hydroxybutyrate** yields **10,500 grams of ATP;** whereas, 100 grams of **glucose** produces only **8,700 grams of ATP.**

Ketogenic Diet

- **Adverse Effects.**

- The short-term effects (up to 2 years) of the ketogenic diet are well reported and established.
- However, the long-term health implications are not well known due to limited literature.
- The most common and relatively minor short-term side effects of the ketogenic diet include a collection of symptoms like **nausea, vomiting, headache, fatigue, dizziness, , difficulty in exercise tolerance, and constipation**,
- **“keto flu”,** These symptoms resolve in a few days to few weeks
- Ensuring adequate fluid and electrolyte intake can help counter some of these symptoms

Ketogenic Diet

- The popular belief that high-fat diets cause obesity and several other diseases such as coronary heart disease, diabetes, and cancer has not been observed in recent epidemiological studies. Studies carried out in animals that were fed high-fat diets did not show a specific causal relationship between dietary fat and obesity. On the contrary, very-low-carbohydrate and high-fat diets such as the ketogenic diet have shown to beneficial to weight loss.
- Ketogenic Diet - StatPearls - NCBI Bookshelf (nih.gov)

Ketogenic Diet

- **Use:** Dietary treatment promises to improve the quality of life with a significant decrease in seizure frequency.
- An increase in the global use of the ketogenic diet is currently observed, The ketogenic diet requires strict dietary and medical control due to its restrictiveness and side effects.
- **Diet Guidelines:**

- Fat: 55% to 60%
- Protein: 30% to 35%
- Carbohydrates: 5% to 10%
- In a 2000 kcal per day diet, carbohydrates amount up to **20 to 50 g per day only.**

Ketogenic Diet

- There are several versions of the keto diet. The standard (SKD) version is the most researched and most recommended.
- **Foods to avoid:**

- **sugary foods:** soda, fruit juice, smoothies, cake, ice cream, candy, etc
- **grains or starches:** wheat-based products, rice, pasta, cereal, etc
- **Fruit:** all fruit, except small portions of berries like strawberries
- **Beans or legumes:** peas, kidney beans, lentils, chickpeas, etc.
- **Starchy and non-starchy veggies:** potatoes, sweet potatoes, carrots, etc.
- **unhealthy fats:** processed vegetable oils, mayonnaise, etc.
- **alcohol:** beer, wine, liquor, mixed drinks

Ketogenic Diet

- **Foods to eat:**
- **meat:** red meat, steak, sausage, chicken, and turkey
- **fatty fish:** salmon, tuna, and mackerel
- **eggs:** whole eggs
- **Butter**
- **Cheese:** unprocessed cheeses like cheddar, goat, cream, blue, or mozzarella.
- **nuts and seeds:** almonds, walnuts, flaxseeds, pumpkin seeds, chia seeds, etc.
- **healthy oils:** extra virgin olive oil, and avocado oil
- **avocados:** whole avocados or freshly made guacamole
- **low carb veggies:** green veggies, tomatoes, onions, peppers, etc.
- **condiments:** salt, pepper, herbs, and spices

Ketogenic Diet