Celiac Disease

- World’s most common genetic food disorder
- Rising prevalence
  - over past 5 decades, 4-fold increase
- Affects 1% population
- 1 in 133 people in US
  - 83% are undiagnosed or given wrong diagnosis

Etiology

- High link to autoimmune diseases
  - children with type 1 diabetes
  - twice as frequent

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Breast Feeding / Infant Feeding

- Child’s risk of developing CD
  - Ivarsson et al found breast feeding to be protective
  - “Prevent CD” breast feeding and timing of introducing gluten did NOT have influence
  - “Risk of Celiac Disease and Age at Gluten Introduction” no difference
  - Breast feeding does not seem to offer protection against developing CD


Pathogenesis of Celiac Disease

- Gluten proteins (gliadins and glutenins) trigger the immune response
- Compromised epithelial function (no barrier to passage of these gluten proteins)
- Large peptide fragments penetrate through epithelium into lamina propria
- Causes immune response (T cells)

Celiac Disease

- T cells make pro-inflammatory cytokines
- Destruction of surface epithelium
- Villous atrophy
- Malabsorption of nutrients
- Undiagnosed can increase risk for other medical conditions
- Treatment = avoidance of wheat, rye, barley
Spectrum of Gluten Disorders

- Autism Spectrum Disorders
  - what is the role of gluten free, casein free diet?
- Non-celiac gluten sensitivity (18 million Americans)
  - ADHD
  - IBS
- Celiac disease (3 million Americans)
  - immune-mediated GI adverse reaction

Gluten

- What is gluten?
- Which foods contain gluten?
- Do your patients know what gluten is?

Diagnosis

- Genetic testing
  - HLA genotyping
- Serological testing
  - tTG antibodies
- Small intestinal biopsy
  - type 3 Marsh score

JAND 2014
Systemic Manifestations

- Classic gastrointestinal symptoms
- Dermatitis herpetiformis
- Oral signs/symptoms

Cutaneous Manifestation of CD

- Dermatitis herpetiformis
  - Intensely pruritic polymorphous lesions symmetrically located on extensor surfaces (diagnosed by skin biopsy)
  - No digestive symptoms
  - Intestinal damage
  - Treatment: GF diet, dapsone

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Dapsone

- 4,4'-diaminodiphenylsulfone
- Anti-inflammatory
- Antibacterial (with similar mechanism of action as sulphonamide)
- Only medicine for DH approved by US FDA

Mechanism of Action

- Antimicrobial
  - inhibit bacterial dihydropterasyn synthase in folic acid metabolic pathway
- Anti-inflammatory
  - inhibit neutrophil myeloperoxidase activity
  - suppress hypochlorous production and neutrophil activity

Oral Dapsone

- Well absorbed
- Long half-life (10-50 hr)
- Infants, child, adolescent 0.5 - 2 mg/kg/day in 1-2 divided doses
  - once lesions controlled
  - decrease dose, as tolerated for chronic therapy
  - usual range 0.125 – 0.5 mg/kg/day

Ermacora, 1986 Kliegman, 2011
Several Adverse Side Effects

- Dependent upon dose and length of therapy
- More frequent in patients (anemia, cardiopulmonary disease, glucose-6-phosphate dehydrogenase deficiency)
- Hemolytic anemia (can occur within 1st 2 weeks)
- Dapsone hypersensitivity syndrome (fever, rash, neurological, GI, nephropathy, liver)

Antiga 2015

Oral Dapsone

- Generally well tolerated
- Check glucose 6-phosphate dehydrogenase level prior to start of medication
- Closely monitor liver and renal function tests
- Weekly CBC (possible agranulocytosis)

Topical Dapsone 5% Gel

- Has been used as therapy for DH
- Not yet the standard of care
- Case studies
  - well tolerated
  - mild side effects (local dryness, rash)
  - dramatic improvement when combined with GF diet
  - 1-2 years on strict GF diet may not need med

Handler, 2012 Burbidge, 2016
Oral Manifestations

- Key review article

- Oral signs/symptoms
  - delayed tooth eruption
  - oral lichen planus
  - DED
  - RAU

Dental Enamel Defects
Treatment

- Strict, lifelong gluten-free diet
- Extremely limiting
- Difficult to follow
- Confusing
- Often not nutritionally balanced
- Consider referral to RD

Culinary Approach

- Strict lifelong GF diet
  - Discuss avoidance of food
  - Evaluate nutritional quality of GF diet
  - Help plan balanced, healthy avoidance meal plans
  - Pay special attention to foods high in Fe, folate, B12
  - Help with the safe selection of appropriate supplement, if needed

Take Measures to Ensure Safety

- Home
- School
- Camp
- Strategies
- Develop individualized treatment plan
Ensure Safety

- Individualized treatment plan
- Cross contact avoidance
  - foods
  - medications (excipients)
  - dental products
  - non-food items

Hosp Pharm 2013

Safety: School

- Individualized treatment plan
- Communicate with students and parents
- Communication with school staff
  - cafeteria
  - classroom
  - playground
  - field trips

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Safety: Dining Out

- Check website
- Call ahead
- Eat during least busy hours
- Always come prepared
  - "Chef card"

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Safe Foods - GF

- Cook with GF grains
- GF breads, crackers
  - whole grain
  - seeds
Avoid gluten containing ingredients
- wheat
- rye
- barley
- contaminated oats

Nutrient Dense, Gluten-Free Strategy

- Meat, poultry, pork, beans
- Rice milk
- Fruits
- Fresh salad
- Vegetables
- Rice (brown, wild, red, black)
- Gluten-free grains, pasta, bread

Gluten-Free Substitutions

- Nutrient density
- Taste
- Texture
- $$ $$
- Presentation/appearance
Allowed Grains on Gluten-Free Diet:

- Rice
- Corn (Maize)
- Soy
- Potato
- Tapioca
- Beans
- Garfava
- Sorghum
- Quinoa
- Millet
- Buckwheat
- Arrowroot
- Amaranth
- Teff
- Montina
- Flax

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Quinoa Vegetable Medley

- 1 C uncooked quinoa
- 3 T extra virgin olive oil (additional for roasting eggplant)
- 1 T apple cider vinegar
- ½ t salt
- 1/8 t fresh ground pepper
- 1 medium eggplant, sliced and cut in quarters
- ½ t dried thyme
- ½ t dried oregano
- ½ t dried coriander
- 1 C snow peas, cut in quarters
- ¾ C cherry tomatoes, cut in quarters
- 2 T fresh dill, chopped (additional for garnish)

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Culinary Approach/FALCPA

What are the requirements of the Food Allergen Labeling and Consumer Protection Act?

- gluten-free
- no gluten
- free of gluten
- without gluten

Gluten-free claim is voluntary
Patients with Food Intolerance

- You will feel the impact in your practice
- Create a special challenge for nurse practitioners
- Offer many opportunities for education and support

Thank you!
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