

Session Title: A Dietitian’s Perspective on the Multidisciplinary Approach to Gastrointestinal Graft versus Host Disease Management

I have no commercial relationships to disclose.

Presentation Overview/Summary:

Graft versus host disease (GVHD) is a common complication of allogenic hematopoietic stem cell transplants (SCT). It occurs during the post-transplant period when the new immune system (graft) recognizes the patients (host) tissue as foreign, and attacks.¹ Gastrointestinal (GI) GVHD usually presents with significant GI symptoms including dysphagia, abdominal pain, nausea, vomiting, watery diarrhea, and GI bleeding, which can lead to malabsorption, dehydration, weight loss, and severe electrolyte disturbances.² The goal for management of GI GVHD is to minimize gastrointestinal dysfunction, control symptoms, and provide adequate nutritional support.³ Either enteral nutrition (EN) and/or parenteral nutrition (PN) support may be required as oral intake is often withheld to avoid mucosal stimulation and damage.⁴⁻⁷ Immunosuppressive medications, corticosteroids, and nutrition support delivery contribute to hyperglycemia, which is a common and serious complication.⁸⁻¹⁰ A multidisciplinary team approach is essential in this population to prevent complications. The registered dietitian nutritionist (RDN) plays an important role in optimizing glycemic control among this high risk patient population.

Learning Objectives:

At the conclusion of this presentation, the learner will be able to:

1. Understand the clinical manifestations, treatment plan, and nutritional management of gastrointestinal (GI) graft versus host disease (GVHD), including oral nutrition therapy, enteral nutrition, and parenteral nutrition.
2. Identify potential clinical factors for hyperglycemia in GI GVHD patients.
3. Understand the necessity for a multidisciplinary team approach in the management of glycemic control among GI GVHD patients receiving nutrition support.

Outline:

Clinical Manifestations and Treatment of GI GVHD:

- Symptoms of GI GVHD following allogeneic SCT include dysphagia, abdominal pain, nausea, vomiting, watery diarrhea, and GI bleeding, potentially leading to malabsorption, dehydration, weight loss, and severe electrolyte disturbances²
- Staging and overall grade of acute GI GVHD is determined by volume of diarrhea and presence of nausea/vomiting²
 - 0 = no GI GVHD or diarrhea \leq 500 mL/day
 - 1 = diarrhea volume 501-1000 mL/day with persistent nausea and vomiting
 - 2 = diarrhea volume 1001-1500 mL/day
 - 3 = diarrhea volume $>$ 1500 mL/day
 - 4 = Severe abdominal pain +/- ileus
- Initial treatment of acute GI GVHD includes corticosteroids, with second-line therapies being immunotherapy agents (infliximab, rituximab)¹
- Hyperglycemia is a common side effect due to the combination of stress, steroid administration, immunosuppressant agents, and PN support,⁸ which can lead to impaired immune response, endothelial dysfunction, systemic elevation of pro-inflammatory cytokines, muscle and fat catabolism⁹ and adverse outcomes¹⁰
 - Consult services are utilized to optimize glycemic control, including the primary team (bone marrow transplant), pharmacy, nutrition, endocrinology

Nutritional Management of GI GVHD

- Oral Nutrition Therapy³⁻⁵
 - Recommended Nutritional Management:
 - GI GVHD stage 1: GI GVHD Diet (see below)
 - GI GVHD stage \geq 2: nothing by mouth (NPO, bowel rest) until diarrhea $<$ 500 ml/day, then GI GVHD Diet
 - *GI GVHD Diet: foods (low fiber, low fat, low lactose, minimized concentrated sweets, limited gastric irritants/acidity) may be better tolerated³⁻⁴*

- Seattle Cancer Care Alliance/Fred Hutchinson Cancer Research Center: created a stepwise approach utilizing a five-phase diet regimen (limit fat, fiber, lactose, gastric irritants, acidic foods)³⁻⁴
 - Diet restrictions are lifted gradually with tolerance of new food groups without increased symptoms
- Nutrition Support Guidelines
 - American Society for Parenteral and Enteral Nutrition (ASPEN): “Nutrition support is appropriate in patients receiving anticancer treatment who are malnourished or who are anticipated to be unable to ingest and/or absorb adequate nutrients for prolonged period of time (7-14 days)”¹¹
 - European Society for Parenteral and Enteral Nutrition (ESPEN): TPN is appropriate for patients with “severe mucositis (grade 3-4), ileus, or intractable vomiting for hematopoietic stem cell transplant patients”¹²
 - ASPEN recommends maintaining blood glucose values between 140-180 mg/dL for adults receiving nutrition support¹³
- Enteral Nutrition (EN)
 - For those unable to meet needs orally, safe placement of enteral access may be difficult due to thrombocytopenia and friable mucosa with mucositis; however, EN in addition to oral diet (when able), is the preferred route to maintain the mucosal barrier⁵
 - Provision of a standard polymeric EN formula has been found to lower the risk of developing acute GVHD when initiated shortly after transplantation (after completing conditioning chemotherapy/day +1 post transplantation or before the development of mucositis), therefore, should be considered early in treatment^{6,7}
- Parenteral Nutrition (PN)
 - PN should be considered for those with GI GVHD stage ≥ 2 who are unable to tolerate adequate oral nutrition or EN support after 7-14 days, or who are malnourished, with attempt to transition to an oral diet or EN support based on improvement in clinical symptoms¹¹
 - Refer to the ASPEN/Society of Critical Care Medicine (SCCM) guidelines for dosing requirements for parenteral nutrition¹⁴
 - Proactive strategies for management of PN-related hyperglycemia:
 - QID point of care blood glucose (BG) monitoring
 - Advance to goal dextrose dosing only once achieving BG <180 mg/dL
 - Daily communication between the RDN/nutrition support team, medical team, and endocrinology to discuss factors that may impact glycemic control, including infection and changes in corticosteroids are needed to determine an appropriate insulin dose to maintain a blood glucose <180 mg/dL
 - Recommended insulin dosing guidelines:
 - BG >180 mg/dL x 2 on serum blood draws: recommended starting dose of regular insulin 0.05 units/gram dextrose (no history of DM), or 0.1 units/gram dextrose (history of DM)¹⁵
 - Increase regular insulin doses in increments of 0.05-0.1 units/gram dextrose based on glycemic control and renal function¹⁵

Key Takeaways/Fast Facts

1. Nutritional management of GI GVHD may include oral, enteral and/or parenteral nutrition support; however, use of oral or EN support is preferred and may offer clinical benefit to the patient. Thus, consider early enteral nutrition support to minimize risk for developing GI GVHD.
2. A multidisciplinary approach to management of GI GVHD may improve outcomes and quality of care, including minimizing complications.

Learning Assessment Questions:

1. Which of the following describes why hyperglycemia can occur after allogeneic stem cell transplantation?
 - a. **Immunosuppressive agents, steroids, parenteral nutrition (PN) (all 3 components are associated with hyperglycemia)**
 - b. Antibiotics, steroids, immunosuppressive agents
 - c. Anti-emetics, PN, antibiotics
 - d. PN, steroids, antibiotics
2. Hyperglycemia can lead to all of the following EXCEPT:
 - a. An impaired immune system
 - b. Endothelial dysfunction

- c. Systemic elevation of pro-inflammatory cytokines
 - d. Anabolism of muscle and fat (catabolism of muscle and fat is caused by hyperglycemia)**
3. What is a benefit of utilizing early enteral nutrition with gastrointestinal graft versus host disease?
 - a. May decrease risk for hyperglycemic events
 - b. May increase risk for bacterial translocation
 - c. May reduce the risk for developing GI GVHD (helps prevent bacterial translocation and maintain mucosal barrier)**
 - d. May prevent development of chemo-related complications
 4. Which of the following would be an appropriate food to consume during phase 3 of the GI GVHD diet progression?
 - a. Sugar free jell-o and chicken broth
 - b. Baked chicken with white rice (introduction of solid bland foods is appropriate for phase 3 of the diet progression: avoiding lactose, fiber, fat, gastric irritants)**
 - c. Meat and cheese lasagna
 - d. Salmon with broccoli
 5. Which of the following is NOT a presenting sign of GI GVHD?
 - a. Weight gain (weight loss is a sign of GI GVHD due to severe GI symptoms that can impair adequate nutritional intake)**
 - b. Malabsorption
 - c. Dehydration
 - d. Electrolyte disturbances

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