Radiation Enteritis and Nutrition: A Case Study

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Agenda

- Introduction
- Case Report
- Hospital Course of Patient
- Case Discussion
Introduction

RADIATION ENTERITIS AND NUTRITION: A CASE STUDY
Introduction

- Cervical cancer
- Cervical sleeve and brachytherapy
- Radiation enteritis
Delivery of brachytherapy using applicators placed in the cervix
Case Report: JW

- 66 y/o AA female
- Admitting complaints
  - Nausea, vomiting, diarrhea
  - Weakness x4 days pta 2/2 radiation tx for cervical cancer
  - Generalized pain
  - Poor appetite and not eating for 3 days pta
- Admitting diagnosis: radiation enteritis
Social History

- Widowed with two daughters and a son-in-law
- Lives with daughter
- Both parents deceased
  - HTN and DM on mother’s side
- Denies family psychiatric history
- History of smoking
- Denies alcohol or illicit drug use
Past Medical History

- Cervical cancer
  - Chemotherapy, radiation therapy
- Stage 3 CKD
- Recurrent CVAs in 2013
  - Residual left arm weakness
- HTN
- GERD
- History of diastolic heart failure
- Hypothyroidism
- NKFA
Surgical History

- Dilation and curettage in July 2013
- No surgical procedures during current admission
- Scheduled for cervical sleeve implantation once nutritionally stable
Nutritional History

- Per patient
  - Decreased appetite 1 month pta
  - Recent weight loss associated with diarrhea

- Per medical chart – January admission
  - 50-75% of meals, 100% of nutrition supplements

- Per medical chart – July admission
  - Family reported gradual decrease in appetite and intake since January admission
  - ~50% of meals
Weight History

- IBW = 125 # using Hamwi equation for women
- UBW = 116 # per pt
- Admission wt = 100 # (estimated)
- Weight loss: 16 # or 14% of UBW = significant weight loss since January
- BMI: 16.6 (underweight)
<table>
<thead>
<tr>
<th>DATE</th>
<th>WEIGHT (IN POUNDS)</th>
<th>SOURCE OF WEIGHT</th>
<th>% UBW</th>
<th>% IBW</th>
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<tbody>
<tr>
<td>JAN 31</td>
<td>114</td>
<td>MEASURED</td>
<td>98.3</td>
<td>91.2</td>
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<tr>
<td>JULY 8</td>
<td>102</td>
<td>MEASURED</td>
<td>87.9</td>
<td>81.6</td>
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<tr>
<td>NOV 6</td>
<td>100</td>
<td>ESTIMATED</td>
<td>86.2</td>
<td>80.0</td>
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<tr>
<td>NOV 14</td>
<td>99</td>
<td>MEASURED</td>
<td>85.3</td>
<td>79.2</td>
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<tr>
<td>NOV 16</td>
<td>100.5</td>
<td>MEASURED</td>
<td>86.6</td>
<td>80.4</td>
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<tr>
<td>NOV 18</td>
<td>99</td>
<td>MEASURED</td>
<td>85.3</td>
<td>79.2</td>
</tr>
<tr>
<td>NOV 24</td>
<td>99</td>
<td>MEASURED</td>
<td>85.3</td>
<td>79.2</td>
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</tbody>
</table>
Other Nutrition-Related Information

- Physical activity
  - No information pta
  - Not ambulatory during current admission

- Use of vitamins/minerals, oral nutrition supplements, and/or alternative supplements
  - No information available
  - Received Boost Pudding, Ensure Plus, and Magic Cup during previous admissions

- Cultural attitudes that affect dietary intake
  - No cultural or religious preferences or restrictions expressed
Hospital Course

RADIATION ENTERITIS AND NUTRITION: A CASE STUDY
Medical Treatment

Day 1
- Pt c/o severe nausea and diarrhea
- Chest x-ray
- MD recommended follow-up CT
- Patient received chemotherapy one week pta. Oncology consulted.
- Diet: Clear liquid. Intake <25% of meals.

Day 2 (11-7-13)
- SLP consult → h/o modified texture/consistency diet
- Pt continues to c/o severe nausea, now vomiting
- +C. diff in stool; oral vancomycin and GI consulted
- +multiple thyroid nodules per chest CT
- Per oncologist, pt received 5 doses weekly carboplatin starting Oct 30
- Scheduled internal radiation with cervical sleeve postponed
- Diet: Clear liquid with Ensure Clear TID. Intake 25-50% of meals
Day 3

- GI consult → *C. diff* infection 2/2 chemo; continue oral vancomycin
- Pancytopenia 2/2 chemo; will monitor
- Acute kidney insufficiency improving
- Diet: Clear liquid with Ensure Clear TID. Intake <25% of meals.

Day 4

- Nutrition consult → poor appetite 2/2 severe nausea
- Recommendation: Consider additional nutrition support if intake does not improve.
- Diet: Clear liquid with Ensure Clear TID. Intake <25% of meals and supplements.

Day 5

- No patient updates noted in medical chart.
- Diet: Clear liquid with Ensure Clear TID. Intake n/a.
Day 6
- Unable to complete nutrition interview 2/2 patient’s lethargy; unopened Ensure Clear observed at bedside.
- Per chart, diet to be advanced to full liquids at lunch
- Patient c/o occasional nausea
- Diet: Clear liquid with Ensure Clear TID. Intake n/a.

Day 7
- Patient with ?seizure symptoms → emergency head CT → diffuse brain atrophy, old multifocal infarctions with encephalomalacia, and no acute bleeds.
- Diet: Full liquid with Ensure Clear TID. Intake n/a.

Day 8:
- SLP evaluation 2/2 new symptoms → moderate oropharyngeal dysphagia → puree solids with nectar thick liquids
- Yellowish coating on tongue → ?oral thrush.
- Diet advanced from full liquid to puree with nectar thick liquids after SLP evaluation. Intake n/a.
Day 9
- Severe nausea
- Neurology consult to evaluate tremors noted by nursing → chills, not seizures. Keppra to be d/c
- EEG → encephalopathy but no epileptic activity
- Diet: Puree with nectar thick liquids; Ensure Plus BID and Ensure Clear q lunch discontinued. Intake < 5% of meals.

Day 10, 11, 12
- No patient updates in medical chart. Diet: Puree with nectar thick liquids. Intake n/a.
Day 13
- SLP advanced diet to thin liquids after follow-up evaluation
- RN reports pt holding meds in mouth, spitting out
- GI consult for possible PEG placement; ?candidate; family interested but pt refuses
- Team to wait until C.diff resolves
- Diet: Puree with nectar thick liquids. Intake 100% per pt; 0% per nursing notes.

Day 14
- 24-hr calorie count ordered
- Psychiatry consult
- Diet: Puree with thin liquids. Intake n/a.

Day 15
- Transferred to ICU
- Family meeting with palliative scheduled post-calorie count
Day 16
- Dronabinol
- Requesting sandwich
- Unable to complete nutrition interview due to patient’s lethargy
- Family meeting: Family agreed to temporary nutrition support, but patient refused
- Diet: Puree with thin liquids. Boost pudding q breakfast, Magic Cup q lunch, and Ensure Plus q dinner. Intake minimal per calorie count.

Day 17
- No patient updates in medical chart
- Diet: SLP advanced diet to mechanical chopped diet with thin liquids. Intake: ¼ turkey sandwich during SLP evaluation.

Day 18, 19: No patient updates in medical chart. Diet: Mechanical Chopped with thin liquids. Boost pudding q breakfast, Magic Cup q lunch, and Ensure Plus q dinner. Intake n/a.
Day 20
- Pt to be transferred with follow-up with PCP within 1 week of discharge
- A follow-up appointment for cervical (radiation) sleeve placement to occur after rehabilitation
- Diet: Mechanical Chopped with thin liquids. Boost pudding q breakfast, Magic Cup q lunch, and Ensure Plus q dinner. Intake: 1 banana at breakfast, no other foods.

Day 21
- SLP reported patient’s appetite and intake improved; swallow function appears to be back at baseline
- Team awaiting family’s decision of rehabilitation facility choice.
- Diet: Mechanical Chopped with thin liquids. Boost pudding q breakfast, Magic Cup q lunch, and Ensure Plus q dinner. Intake n/a.

Day 22
- Patient transferred to a sub-acute rehabilitation facility
- Diet: Mechanical Chopped with thin liquids. Boost pudding q breakfast, Magic Cup q lunch, and Ensure Plus q dinner. Intake n/a.
## Estimated Nutrient Needs

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>KCAL REQUIREMENTS</th>
<th>PROTEIN REQUIREMENTS</th>
<th>FLUID REQUIREMENTS</th>
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</thead>
<tbody>
<tr>
<td>FACILITY STANDARDS</td>
<td>30-35 KCAL/KG&lt;br&gt;1364-1591 KCAL</td>
<td>1.4-1.8 G/KG&lt;br&gt;64-82 G</td>
<td>25-30 ML/KG&lt;br&gt;1136-1364 ML</td>
</tr>
<tr>
<td>EVIDENCE ANALYSIS LIBRARY (EAL)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>ONLINE NUTRITION CARE MANUAL (NCM)</td>
<td>30-35 KCAL/KG&lt;br&gt;1364-1591 KCAL</td>
<td>1.5-2.5 G/KG&lt;br&gt;68-114 G</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Nutrition Diagnosis

- Inadequate oral intake (NI-2.1) related to intractable nausea and decreased appetite as evidenced by patient/family reports consuming ~50% most meals pta plus poor po in hospital.

- Chewing difficulty (NC1.2) related to limited dentition and CVA-associated chewing difficulties as evidenced by need for modified consistency diet per SLP recommendations.

- Underweight (NC3.1) related to suspected poor oral intake, cancer therapy related nausea, vomiting, diarrhea as evidenced by BMI of 16.6 and 14% wt loss in past year.

- Increased nutrient needs (NI-5.1) related to hypermetabolic state as evidenced by patient actively being treated for cervical cancer with chemo and radiation.
Nutrition Intervention

- Commercial beverage (ND-3.1.4) and food (ND-3.1.3): Initiate nutrition supplements TID per patient preferences
  - GOAL: Patient meets increased nutrient needs.

- Prescription medication (ND-6.1): Recommend appetite stimulant.
  - GOAL: Patient’s po intake improves.

- Survival information (E-1.3) regarding increased nutrition needs during cancer treatment.
  - GOAL: Patient’s po intake improves.
Referral to other providers (RC-1.5): Refer to SLP.

GOAL: Evaluate need for modified consistency diet/risk of aspiration based on baseline diet and need for modified textures during previous admissions.

Referral to other providers (RC-1.5): Refer to outpatient oncology RD.

GOAL: Patient receives more information regarding cancer and nutrition, and nutritional status is monitored after discharge.

Collaboration with other providers (RC-1.4): Collaborate with medical team to determine need/feasibility for nutrition support if po intake does not improve.

GOAL: Patient is nutritionally stable for cervical sleeve implantation.
Nutrition Monitoring and Evaluation

**INDICATORS**

- Total energy intake (FH-1.1.1.1)
- Liquid meal replacement or supplement (FH-1.2.1.3)
- Food and nutrition knowledge (FH-3.1)
- Adherence (FH-4.1)
- Weight (AD-1.1.2)

**CRITERIA**

- Patient consumes >75% of meals.
- Patient consumes >75% of nutrition supplements.
- Patient is able to describe the importance of optimal nutrition during cancer, particularly during chemotherapy and radiation.
- Patient visits outpatient oncology RD and follows diet recommendations after discharge.
- Patient’s weight trends stabilize or increase.
Overview of Labs and Medications

- (Please refer to charts in handouts)
Case Discussion

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Nutrition Therapy

- JW admitted with poor appetite and GI symptoms
- Wt loss pta due to diarrhea and variable but overall poor oral intake
- Family encouraged 1-2 Ensures each day with variable success
- Facility standards
  - Kcal needs: 1364-1591 kilocalories (30-35 kcal/kg)
  - Fluid needs: 1136-1364 ml (25-30 ml/kg)
  - For cancer patients undergoing treatment, 1.2-1.5 gm/kg protein but due to wasting, protein needs increased to 1.4-1.8 gm/kg, or 64-82 grams of protein.
Minimal oral intake = poor dentition, lack of acceptance of restrictive therapeutic diet (puree with nectar thick liquids), severe nausea, some vomiting, diarrhea, possible oral thrush, and depression

Diarrhea = combination of the effects of chronic radiation enteritis with superimposed *C. Diff* infection; the diarrhea lessened with antibiotic treatment.

Upon admission, JW placed on a clear liquid diet and initially recommended to advance to GI soft

Renal diet during July’s admission noted and PMH indicates need for cardiac diet

However, all dietary restrictions eliminated

Despite increased nutrient needs, pt rarely consumed nutrition supplements
Medical Considerations

- Cancer cachexia evidenced by weight loss, tissue wasting
  - Anorexia
  - Negative impact on quality and duration of life
- Malnourished oncology pts with higher risk of pre-, peri- and post-operative complications
- MNT and medications

- Radiation enteritis common after radiotherapy of the abdomen or pelvis
  - Inflammation and damage of the intestinal mucosa → loss of absorptive capacity
  - Acute: nausea, vomiting, abdominal pain, and diarrhea that typically resolves within 12 weeks
  - Chronic: symptoms persist for 3 months or more, with onset occurring months or even years after radiation treatment is complete
Literature Review

- Low-residue, low-fat, and low-lactose diets to reduce symptoms
  - Definitive nutrition management guidelines lacking
  - Wide range of chronic enteritis from mild to very severe
  - Foods with moderate to high fiber, fat, or lactose did not necessarily prevent symptoms

  - In the absence of specialist advice, women with CRE developed their own coping strategies to prevent GI symptoms.
  - Often chose to overly restrict their diets due to anxiety and frustration surroundings during meals, affecting nutritional status and quality of life
Use of complementary and alternative therapies, particularly for diarrhea management

- “Nutrition supplements”
- Astringent herbs
- Inflammation reducers
- “Infection fighters”
- Bulk forming agents
- Homeopathy
- Acupuncture
Implication of Findings

- Importance of individualized nutrition therapy based on each patient’s preferences and ability to handle certain foods.

- Dietitians play a crucial role in counseling this patient population to avoid unnecessary dietary restrictions, to increase variety in the diet, and to improve the patient’s quality of life through symptom management and prevention.
References


