The Effect of Ginger on EGG patterns in Patients with Anorexia Cachexia Syndrome

Michael Elten*, Ravi Bhargava, Martin Chasen****

***Faculty of Science, University of Ottawa, Ottawa Canada** ****Palliative Care, Bruyère Research Institute, Ottawa Canada**

Background

- Patients with advanced cancer have a wide spectrum of upper GI symptoms, increased inflammatory markers, low albumin and impaired ghrelin levels. These findings are correlated with abnormal gastric myoelectrical activity (GMA)[1]
- Anorexia Cachexia Syndrome (ACS) is defined by a disproportionate loss of skeletal muscle mass, as well as a lack or loss of appetite[2]
- Electrogastrography (EGG) measures the GMA using electrodes placed on the abdominal wall

Ginger *(Zingiber Officinale)*

- Ginger is a plant and phytomedicine native to Southeast Asia
- Clinical trials have reported that ginger and its active constituents can enhance GI motility, reduce nausea and/or accelerate gastric emptying in:
  - Healthy volunteers[3]
  - Cancer induced nausea and vomiting[4]
  - Seasickness[5]
  - Postoperative nausea[6]
  - Morning sickness[7]
  - Motion sickness[8]

- Despite this, no studies on the effects of ginger on advanced cancer patients with ACS have been reported

Methods

15 Patients with advanced cancer and anorexia cachexia enrolled, and participated in the following protocol:

1. Baseline meeting, collection of outcome measures (Day 1)
2. 14 days of oral ginger capsule (1650 mg) administration
3. Final meeting, collection of outcome measures (Day 14)

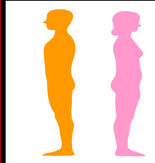
Outcome Measures include:

- EGG diagnosis and reported symptoms
- Inflammatory factors (CRP, albumin) and ghrelin serum levels
- Dyspepsia Symptom Severity Index (DSSI)
- Edmonton's Symptom Assessment System (ESAS)
- Patient Generated Subjective Global Assessment (PG-SGA)

Objectives

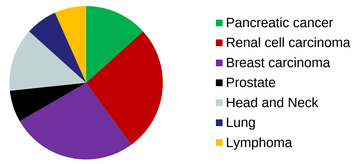
1) To determine the effect of oral ginger administration on gastric myoelectrical activity of patients with ACS
2) To evaluate the symptoms in patients with ACS using 3 validated questionnaires
3) To correlate the levels of inflammatory factors and ghrelin in patients with ACS

Demographics



Male (n=8) Female (n=7)

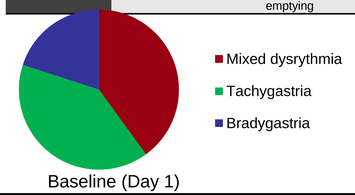
Median age: 58 years
(range: 35-79)



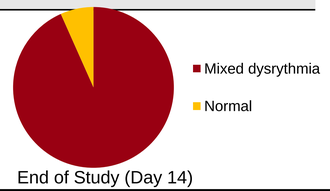
Results

EGG diagnosis and Reported Clinical Symptoms

Patient Number	EGG Diagnosis Visit # 1	Clinical Symptoms Visit # 1	EGG Diagnosis Visit # 2	Clinical Symptoms Visit # 2
P1	Tachygastria	Bloating, Early satiety, Post-prandial fullness, Delayed Gastric Emptying	Mixed Dysrhythmia – nonspecific	Early satiety
P2	Mixed Dysrhythmia – nonspecific	Bloating, GERD, Early satiety, Post-prandial fullness	Mixed Dysrhythmia – nonspecific	Bloating, Early satiety
P3	Bradygastria	Nausea, Bloating, GERD, Early satiety, Post-prandial fullness, Delayed Gastric Emptying	Mixed Dysrhythmia – nonspecific	
P4	Bradygastria	Bloating, GERD, Early satiety, Post-prandial fullness	Mixed Dysrhythmia - nonspecific	Early satiety, Post-prandial fullness
P5	Bradygastria	Nausea, Bloating, GERD, Early satiety, Post-prandial fullness, Delayed Gastric Emptying	Mixed Dysrhythmia – nonspecific	Bloating
P6	Tachygastria	Nausea, Vomiting, GERD, Early satiety, Post-prandial fullness	Mixed Dysrhythmia – nonspecific	Nausea, GERD
P7	Tachygastria	Bloating, GERD, Early satiety, Post-prandial fullness, Delayed Gastric Emptying	Mixed Dysrhythmia – nonspecific	Bloating, Post-prandial fullness
P8	Tachygastria	Nausea, Bloating, Early satiety	Normal	Bloating
P9	Mixed Dysrhythmia – nonspecific	Bloating, Early satiety, Post-prandial fullness, Delayed Gastric Emptying	Mixed Dysrhythmia – nonspecific	Bloating
P10	Mixed Dysrhythmia – nonspecific	Early Satiety, Post-prandial fullness, Delayed Gastric Emptying	Mixed Dysrhythmia – nonspecific	Early Satiety
P11	Tachygastria	Bloating, Early satiety	Mixed Dysrhythmia – nonspecific	
P12	Tachygastria	Bloating,Post-prandial fullness	Mixed Dysrhythmia – nonspecific	
P13	Mixed Dysrhythmia – nonspecific	Nausea, Early Satiety, Delayed gastric emptying	Mixed Dysrhythmia – nonspecific	
P14	Mixed Dysrhythmia – nonspecific	Nausea, Vomiting, early satiety, post-prandial fullness, delayed gastric emptying	Mixed Dysrhythmia – nonspecific	Post-prandial fullness
P15	Mixed Dysrhythmia	Bloating, Early satiety, post-prandial fullness, delayed gastric emptying	Mixed Dysrhythmia	Bloating, Delayed gastric emptying



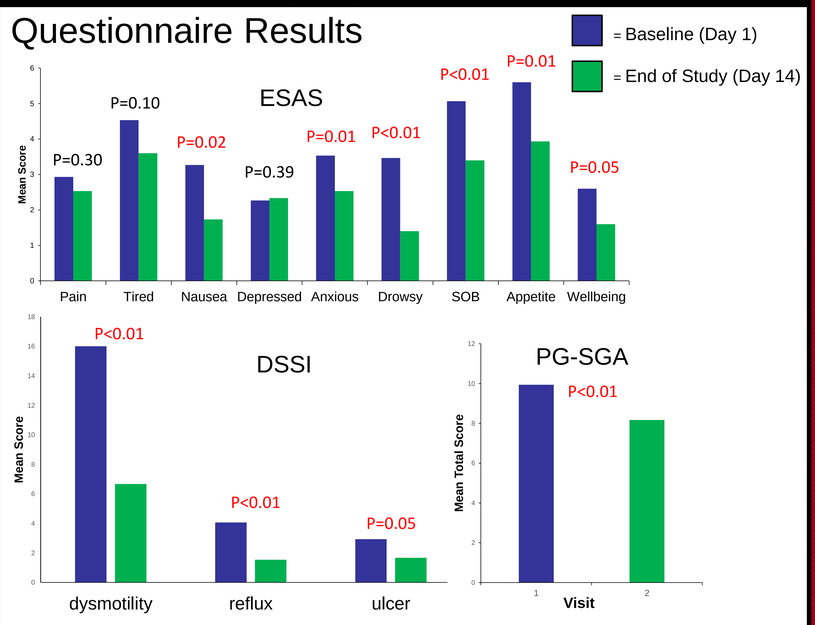
Baseline (Day 1)



End of Study (Day 14)

Results - continued

Questionnaire Results



Blood Test Results

	Baseline: mean (SD)	End of Study: mean (SD)	P value
Albumin	43.33 (3.60)	42.13 (3.30)	0.059
CRP	5.44 (8.28)	6.37 (8.42)	0.14
Ghrelin	Not yet analyzed	Not yet analyzed	Not yet analyzed

Conclusions

- Ginger may normalize gastric motility as measured by EGG
- Ginger may improve a range of GI symptoms that can affect oral intake and quality of life

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