



University of Michigan Health System

Advancing Age is Associated with Progressive Delays in Colon Transit in Patients with Chronic Constipation

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Background

- Epidemiologic studies suggest that the prevalence of constipation increases with advancing age
- Pathophysiologic mechanisms responsible for this observation remain poorly defined
- An age related slowing of bowel transit remains a possible explanation

Aim

- To assess the effect of advancing age on regional (gastric emptying, small bowel & colonic transit) and whole gut transit in adults with chronic constipation (CC)

Methods

- Post hoc analysis of data on adults with CC from two multi-center trials assessing the accuracy of a wireless motility capsule (WMC)
- Data from 243 adults with CC
 - Rome II or modified Rome III criteria
 - All discontinued laxatives, drugs affecting GI motility, and drugs affecting gastric pH during testing
 - No chronic disease or abdominal surgery (except appendectomy, cholecystectomy, c-section or Nissen fundoplication)
- Gastric emptying time (GET), small bowel transit time (SBTT), colonic transit time (CTT), and whole gut transit time (WGTT) calculated based on predefined characteristic changes in pH and/or temperature data recorded by WMC
- Statistical analysis
 - Effect of advancing age on GET, SBTT, CTT, and WGTT was assessed by accelerated life regression analyses, including linear regression and multiple regression adjusting for body mass index, sex and race

Results

Subject Demographics

N= 243

Mean age: 43.7 years

Age range: 18-79

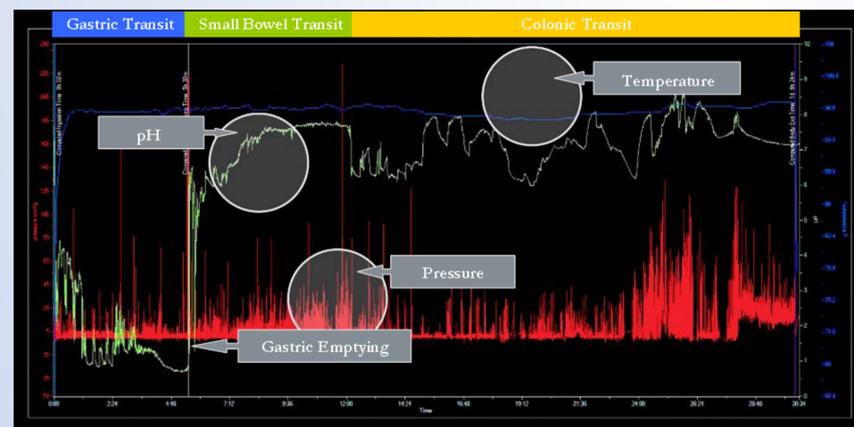
Gender: 88% female

Race: 79% (193) Caucasian

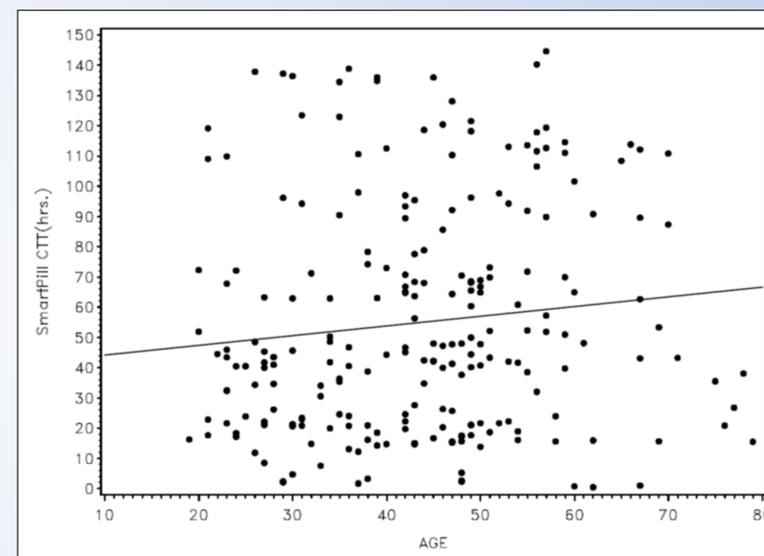
15% (38) Black

2% (6) Hispanic

2% (4) Asian



Scatter plot of colonic transit time vs. age in constipated adults



Association Between Increasing Age and Regional & Whole Gut Transit, adjusting for Body Mass Index, Sex & Race

| | |
|--------------------------|---|
| Gastric Emptying time | No change with increasing age (n=225) |
| Small Bowel Transit time | No change with increasing age (n=223) |
| Colonic Transit Time | Increase by 29 minutes for every 1 year increase in age (p=0.018) (n=228) |
| Whole Gut Transit Time | Increase by 29 minutes for every 1 year increase in age (p=0.021) (n=229) |

Gastrointestinal Transit Times

| | |
|------------------------------------|---------------------|
| Gastric emptying time (n = 238) | 3.63 ± 1.40 (hours) |
| Small Bowel Transit Time (n =236) | 4.31 ± 1.60 (hours) |
| Colon Transit Time (n = 241)) | 56.8 ± 41.2 (hours) |
| Whole Gut Transit Time (n = 242)) | 67.0 ± 42.1 (hours) |

Summary

- In adults with CC, there was a statistically significant increase in colonic transit time of 29 minutes for every year of advancing age
- In adults with CC, there was a statistically significant increase in whole gut transit time with advancing age of 29 minutes for every year of advancing age
- Advancing age was not associated with a change in gastric emptying or small bowel transit in adults with CC

Conclusions

- Advancing age is associated with an increase in colonic and whole gut transit times in CC
- This observation may provide an explanation for the increased prevalence of CC observed with advancing age
- Further studies to define these observed age-related changes with colonic transit in CC are needed