

FACTORS ASSOCIATED WITH INADEQUATE BOWEL PREPARATION FOR COLONOSCOPY IN CHILDREN - A PROSPECTIVE STUDY

Sanjay Kumar, M.D.; Emily Ferrell, R.N.;
Courtney Gingerich, R.N.; Sandeep Gupta, M.D.



Disclosure

- I have no financial relationship to disclose

13112015

2

Introduction

- Good bowel preparation is a primary prerequisite for good quality colonoscopy
- Bowel preparation is a major quality indicator of colonoscopy
- ASGE-ACG Task Force recommends that bowel preparation quality should be documented in procedure report

Weinberg DS et al. Quality indicators for colonoscopy – Gastrointest Endosc 2015;81:31-53



13112015

3

Impact

- Missed diagnosis
- Incorrect diagnosis
- Longer anesthesia time
- Increased frequency of complications
- Cancelled procedures
- Shorter follow-up colonoscopy time
- Increased costs

Rex DK et al. Impact of bowel preparation on efficiency and cost of colonoscopy. Am J Gastroenterol 2002;97:1696-700



Introduction

- Several studies have been done attempting to improve the quality of bowel preparation
- 20-40% of bowel preparations remain inadequate in most centers
- Several patient factors identified in adults which predict inadequate bowel preparation
- This aspect has not been studied in children

Dahshan A et al. A randomized, prospective study to evaluate the efficacy and acceptance of three bowel preparations for colonoscopy in children. Am J Gastroenterol 1995;94(12):3497-501.



12/12/15

5

Objective

















To determine factors associated with inadequate bowel preparation in children undergoing colonoscopy



Methods

- Prospective observational study
- Enrolled children (1 to 18 years) who received standard weight-based PEG 3350 bowel preparation for routine outpatient colonoscopy
- Data was collected from EMR and clinical chart
- Bowel preparation quality was evaluated by endoscopist using a validated tool, Boston Bowel Preparation Scale (BBPS)

Boston Bowel Preparation Scale

BBPS	3	2	1	0
0a Unprepared colon				
1 Portion of mucosa not seen				
2 Minimal amount of residual staining				
3 No residual staining				
AC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BBPS =				

Lai EL, et al. The Boston Bowel Preparation Scale: A valid and reliable instrument for colonoscopy-oriented research. *Gastrointestinal Endoscopy* 2009; 69(3): 620-625

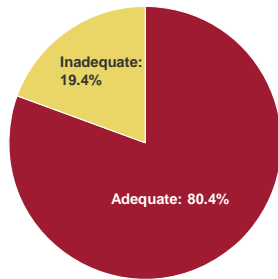
Statistical Analysis

- Patients were divided into two groups based on BBPS score
 - Inadequate preparation (BBPS score < 5)
 - Adequate (BBPS score ≥ 5)
- Groups were compared using Student's *t*-test and Chi-square test
- Univariate and Multivariate mixed effects logistic regression was used to analyze possible predictors of inadequate bowel preparation

Results

- 222 subjects
- Mean age 12.5 years (age range 2-18 year)
- 59.9% Females
- 82.9% Caucasian
- Indications: (abdominal pain 58%, diarrhea 23%, hematochezia 23%, IBD 9.5%, weight loss 5.9%)
- Mean BBPS score 6.5 (SD of ± 2)

Quality of Bowel Preparation



■ Adequate Bowel Preparation ■ Inadequate Bowel Preparation

Body Mass Index and Inadequate Bowel Preparation

BMI	OR	95% CI	P value
Normal BMI vs Overweight	0.92	0.42-2.04	0.8
Normal BMI vs Obese	1.21	0.45-3.22	0.6
Overweight vs Obese	0.88	0.63-1.87	0.6

Other Factors and IBP

Risk Factor	OR	95% CI	P Value
Gender	1.18	0.55-2.52	0.67
Race	1.48	1.07-2.03	0.07
Insurance	1.38	0.63-3.02	0.43
Diarrhea	0.83	0.33-2.04	0.68
Hematochezia	0.9	0.74-1.08	0.26
IBD	1.17	0.72-1.89	0.53
Weight loss	0.8	0.58-1.09	0.16

Summary

- 1 in 5 children had inadequate bowel preparation
- No relationship between inadequate bowel preparation and
 - BMI
 - Gender
 - Race
 - Indication for colonoscopy
 - Insurance type
- We anticipate refinement in our data as more patients are enrolled in this ongoing pediatric study

Future Direction

- This field is worthy of more studies in this era of quality and cost
- Our study shows the factors affecting bowel preparation in adults are different from children
- Examine other factors which may affect the quality of bowel preparation in children

Acknowledgements

- William E. Bennett, MD
- Riley Outpatient Surgery Center Nurses
- Pediatric Gastroenterology Department at Riley Hospital for Children
- Patients who participated in the study!



Future Direction

- Co-morbid conditions
- Medication
- Compliance with bowel preparation
- Socioeconomic factors
- Time between clinic visit and colonoscopy
