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Pain Symptoms and Stooling Patterns Do Not Drive Diagnostic Costs for Children With Functional Abdominal Pain and Irritable Bowel Syndrome in Primary or Tertiary Care

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Abstract

OBJECTIVE—The objectives of this study were to (1) compare the cost of medical evaluation for children with functional abdominal pain or irritable bowel syndrome brought to a pediatric gastroenterologist versus children who remained in the care of their pediatrician, (2) compare symptom characteristics for the children in primary versus tertiary care, and (3) examine if symptom characteristics predicted the cost of medical evaluation.

METHODS—Eighty-nine children aged 7 to 10 years with functional abdominal pain or irritable bowel syndrome seen by a gastroenterologist (n = 46) or seen only by a pediatrician (n = 43) completed daily pain and stool diaries for 2 weeks. Mothers provided retrospective reports of their children's symptoms in the previous year. Cost of medical evaluation was calculated via chart review of diagnostic tests and application of prices as if the patients were self-pay.

RESULTS—Child-reported diary data reflected no significant group differences with respect to pain, interference with activities, or stool characteristics. In contrast, mothers of children evaluated by a gastroenterologist viewed their children as having higher maximum pain intensity in the previous year. Excluding endoscopy costs, cost of medical evaluation was fivefold higher for children evaluated by a gastroenterologist, with higher cost across blood work, stool studies, breath testing, and diagnostic imaging. Symptom characteristics did not predict cost of care for either group.

CONCLUSIONS—Despite the lack of difference in symptom characteristics between children in primary and tertiary care, a notable differential in cost of evaluation exists in accordance with level of care. Symptom characteristics do not seem to drive diagnostic evaluation in either primary or tertiary care. Given the lack of differences in child-reported symptoms and the maternal perspective

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that children evaluated by a gastroenterologist had more severe pain, we speculate that parent perception of child symptoms may be a primary factor in seeking tertiary care.

Keywords

recurrent abdominal pain; chronic abdominal pain; functional abdominal pain; irritable bowel syndrome; gastrointestinal symptoms; cost of care

What's Known on This Subject

Cost of care for adult functional gastrointestinal disorders is higher in tertiary than primary care settings, but cost of care has not been evaluated in children. Adult data also suggest that symptoms may be more severe in tertiary care patients, but this also has not been evaluated in children.

What This Study Adds

This study provides improvement in sample generalizability compared with previous pediatric samples and comparison of cost of evaluation and symptom characteristics for pediatric primary and tertiary care groups.

RECURRENT ABDOMINAL PAIN (RAP) is a common childhood complaint, occurring in ~15% of children and accounting for at least 5% of all pediatric office visits.[1-6] Recently, it has been suggested that RAP can be subclassified based on symptom expression.[7,8] Probably the 2 most common subtypes in the 7- to 10-year-old age group are functional abdominal pain (FAP) and irritable bowel syndrome (IBS), which essentially is FAP associated with a change in stooling pattern.[8] Despite potential differences in patient or symptom characteristics between those treated in primary versus tertiary care, most studies of children with FAP/IBS have been conducted with tertiary care patients only.

In the adult literature, IBS has been associated with a broad pattern of increased health care use and costs, with much of this cost accrued in specialty care and some suggestion that patient symptoms may be related to the decision to seek care and the level and cost of care.[9-18] However, potential differences in cost associated with level of health care use have received little attention in pediatrics. In addition, the potential relationship between symptom severity and cost of care in children with FAP/IBS has not been examined.

Thus, the aims of this study were to (1) provide a comparison of direct costs associated with FAP/IBS in primary versus tertiary care, (2) compare symptom characteristics of children with FAP/IBS in primary versus tertiary care, and (3) evaluate if symptom characteristics predict the cost of medical evaluation.

MATERIALS AND METHODS

Participants

The sample included children aged 7 to 10 years meeting Rome II criteria for FAP or IBS and their mothers. Participants were classified into 1 of 2 groups depending on the physician who performed the medical evaluation: (1) children evaluated by a gastroenterologist (CGI) (n = 46) and (2) children evaluated by a pediatrician (CP) (n = 43). Children were part of a longitudinal study to identify physiologic and psychological factors contributing to the expression of FAP/IBS in children.[19,20]

Participant Selection and Recruitment Procedures

Participants were recruited from a large metropolitan pediatric health care network providing both primary and tertiary care and accepting both public and private insurance. Children also were recruited from 2 large, academically affiliated private pediatric gastroenterology practices. Access to a pediatric gastroenterologist was available to all children in the CP group regardless of geography or insurance. The 45 children in the CGI group were referred by 43 pediatricians, with 6 participants in the CGI group sharing a pediatrician with participants in the CP group. The Baylor College of Medicine institutional review board approved all recruitment and study procedures. Consent was obtained from parents and assent from children.

Children's symptoms met the Pediatric Rome II criteria for FAP or IBS.[8] Participants' symptoms also met von Baeyer and Walker's criteria that pain episodes are rated as moderate or severe (≥3 of 10 on a scale of pain intensity) or have been severe enough to cause the child to stay at home, terminate or avoid play, or to take medication for pain.[21]

Children were identified based on a medical billing code search of all 7- to 10-year-old children in this health care network. Charts containing ICD-9 codes 789.0 (abdominal pain) or 564.1 (IBS) were reviewed by trained research assistants and then further screened by a pediatric gastroenterologist (Dr Shulman) to ascertain that no identified organic illness (eg, gastroesophageal reflux, inflammatory bowel disease) or condition (eg, constipation, lactose intolerance) accounted for the pain or remained a differential diagnosis.

Children in either group were excluded if they had organic gastrointestinal illness or another significant chronic health condition requiring daily medication (eg, diabetes) and/or specialty care follow-up (eg, congenital heart disease). Children with mild chronic illnesses such as asthma were not excluded. Other exclusion criteria included lack of fluency in English, learning or developmental challenges preventing completion of the diary, or documentation in the chart of an abnormal physical examination, decreased growth velocity, gastrointestinal blood loss, unexplained fever, vomiting, chronic severe diarrhea, or weight loss ≥5% of body weight within a 3-month period. Use of gastrointestinal medications (eg, proton-pump inhibitors, antacids, H_2-receptor blockers, laxatives, or motility agents) was not an exclusion criterion unless the medication relieved all of the child's symptoms. This latter criterion was used to exclude children who may have had a disorder or condition other than FAP or IBS (eg, acid reflux, constipation).

Parents of potential participants identified through chart review were sent a letter from the child's physician inviting them to participate. Parents expressing interest were screened further by telephone to ensure eligibility and were scheduled for a home visit.

Data-Collection Procedures

A research assistant collected demographic and pain location information and provided the child and parent with training and written instructions for completing the pain and stool diaries. Children were asked to complete the pain and stool diaries 3 times daily for 2 weeks, as we have described previously.[20] A research assistant had telephone contact with the participating child and parent on the 10th day of diary use to maximize diary completion.

Measures

Parent Screening Interview—Mothers who responded to the study recruitment letter completed a telephone screening interview to ensure eligibility. As a part of that interview, mothers were asked to report the frequency per month that their child experienced abdominal pain, to rate the pain intensity of their child's worst abdominal pain episode in the previous

year by using a 1-to-10 rating scale, and to indicate if their child's abdominal pain interfered with activities (yes/no).

Pain Location—At the home visit children were asked to indicate on their body where they typically experience abdominal pain. Child's reported pain location initially was coded as occurring in the upper right quadrant, upper left quadrant, lower right quadrant, lower left quadrant, periumbilical region, epigastric region, or hypogastric region. Because of low cell counts, responses were combined into epigastric, periumbilical, or hypogastric regions.

Pain and Stool Diary—Children were asked to complete a pain diary 3 times a day (on awakening, after lunch, and evening) for 2 weeks. Children rated pain intensity by using a visual analog scale (VAS) by marking their pain rating on a 100 mm horizontal line anchored with the phrases "no pain at all" and "worst pain you can imagine." The pain intensity score for each rating was established by measuring the distance from the left end of the line in millimeters. A pain episode was defined as a mark of 10 mm or greater. The VAS is a commonly used and psychometrically supported method for measuring pediatric pain, including abdominal pain.[22-24]

The child also rated interference with activities because of pain at each time point. Degree of interference was rated on a 4-point scale (ie, no interference, a little interference, a lot of interference, unable to participate in activities because of pain).[25,26]

Children also completed a stool diary for the same 2 weeks. They were asked to record the occurrence and time of each stool and to identify stool consistency according to 4 descriptors (ie, watery, mushy, formed, or hard balls) accompanied by pictorial representations analogous to the Bristol stool chart.[27] Data were included only for those participants who completed at least 70% of the pain and stool diary.

Calculation of Cost

For participants in the CGI group, all visits to the pediatric gastroenterologist were reviewed and all diagnostic tests were recorded. For participants in the CP group, charts were reviewed for the child's most recent 6 visits to the pediatrician. For any of those 6 visits pertaining to abdominal pain all diagnostic tests were recorded.

Costs of these diagnostic procedures are according to 2007 prices and were compiled by research staff and a staff member affiliated with a local primary care office. Prices for both groups reflect those that would be billed directly to the patient as if he or she was self-pay. Prices for blood work, urine testing, stool studies, and breath testing were based on the most frequently used outpatient laboratory service in the local area. Diagnostic imaging and endoscopy procedures were conducted at the same hospital for both groups, and prices reflect hospital prices that would be billed directly to the patient as if he or she was self-pay. Costs for radiographs, ultrasounds, and upper gastrointestinal radiographic series with or without small bowel follow-through included an average of all associated costs, including radiologist interpretation. Prices for upper gastrointestinal endoscopies, colonoscopies, and flexible sigmoidoscopies (which could only be ordered by a gastroenterologist and therefore only occurred in the tertiary care group) also included an average of all associated costs, including central supply, diagnostic imaging (indicated for post-procedure complications [rare]), dietary verification of oral intake (as part of post sedation/anesthesia care), gastrointestinal procedure suite, laboratory, anesthesia, pharmacy, respiratory care, and pathology. Calculation of cost did not include cost of prescription or over-the-counter medications.

RESULTS

Demographics

A description of the study sample is provided in Table 1. The mean age of the children was 9.0 years, with 69% being female. Age, ethnic distributions, and mother's level of education did not significantly differ between the CGI and CP groups.

Child-Reported Diary Data

Group comparisons of child-reported, 2-week diary data reflected no significant differences between the CGI and CP groups with regard to any pain characteristic, interference with activities because of pain, or stooling characteristics (Table 2). Pain location trended toward significance ($P = .05$), with children in the CGI group more often indicating their pain as periumbilical and children in the CP group more often indicating pain as epigastric.

Mother-Reported Telephone Screening Data

Evaluation of the mothers' screening data (Table 3) reflected that mothers in the CGI group reported their children as having higher maximum pain intensity in the previous year compared with mothers in the CP group. Mothers did not differ significantly with respect to retrospective ratings of pain frequency or whether pain interfered with the child's activities.

Diagnostic Studies

Table 4 lists all diagnostic tests that were recorded, as well as the percentage of children in each group documented as receiving each test at least once.

Differences in Cost of Medical Evaluation

Because the amount of variance in cost was significantly different between groups (with significantly greater variation in the CGI group), *t* tests assuming unequal variances were examined for all group comparisons of cost. Evaluation of group differences in cost of medical evaluation began with independent sample *t* tests comparing the 2 groups on total cost of evaluation. Because endoscopy procedures could only be performed on children in the CGI group, total cost of evaluation was compared both excluding and including the endoscopy procedure cost (Table 5). When endoscopy costs were excluded, costs for the CGI group were significantly (fivefold) higher than those for the CP group. Understandably, this difference increased further (ninefold) when endoscopy costs were included.

To further explore what types of medical evaluation might be contributing to differences in total cost, group comparisons also were examined separately for cost of blood work, urine testing, stool studies, breath testing, and diagnostic imaging (Table 5). Children in the CGI group incurred more cost than the CP group for all categories of testing except urine testing, which was not significantly different between groups.

Prediction of Cost of Medical Evaluation

A series of multiple regression analyses were conducted to explore if child-reported pain characteristics, child-reported stool characteristics, or mother-report of child symptoms predicted total cost of evaluation in either the CGI or CP groups. For the CGI group, regression analyses were conducted both with and without endoscopy procedures included in the total cost of evaluation.

Child-reported pain characteristics (mean pain, maximum pain, number of pain episodes, average interference rating for pain episodes, and child-report of typical pain location) did not significantly predict cost for the CGI group when endoscopy procedures were excluded

($F_{5,41} = 1.38$, $P = .25$, $R^2 = 0.16$, adjusted $R^2 = 0.05$) or included ($F_{5,41} = 0.62$, $P = .68$, $R^2 = 0.08$, adjusted $R^2 = -0.05$). Similarly, for the CP group, pain characteristics did not predict cost of evaluation ($F_{5,40} = 1.07$, $P = .40$, $R^2 = 0.13$, adjusted $R^2 = 0.01$).

Child-reported stooling characteristics (mean number of bowel movements per day, percent rated as watery, and percent rated as hard) also did not significantly predict cost for the CGI group when endoscopy procedures were excluded ($F_{3,45} = 1.29$, $P = .29$, $R^2 = 0.08$, adjusted $R^2 = 0.02$) or included ($F_{3,45} = 1.05$, $P = .38$, $R^2 = 0.07$, adjusted $R^2 = -0.00$). Similarly, for the CP group, stooling characteristics did not predict cost of evaluation ($F_{3,42} = 0.76$, $P = .52$, $R^2 = 0.06$, adjusted $R^2 = -0.02$).

Mother screening data (number of pain episodes per month, rating of worst pain in the previous year, whether pain interfered with activities) did not significantly predict cost for the CGI group when endoscopy procedures were excluded ($F_{3,43} = 0.82$, $P = .49$, $R^2 = 0.06$, adjusted $R^2 = -0.01$) or included ($F_{3,43} = 1.19$, $P = .34$, $R^2 = 0.08$, adjusted $R^2 = 0.01$). Finally, for the CP group, mother screening data did not predict cost of evaluation ($F_{3,42} = 0.43$, $P = .73$, $R^2 = 0.03$, adjusted $R^2 = -0.04$).

DISCUSSION

Our study indicated that child-reported symptom characteristics are not different between children with FAP/IBS in tertiary versus primary care and further, that symptoms did not predict the cost of medical evaluation. Our study is the first, to our knowledge, to note that stool characteristics of children with FAP/IBS in tertiary versus primary care do not differ. The 2 previous pediatric studies comparing abdominal pain characteristics in primary and tertiary care were contradictory, with diary data reflecting no group differences but retrospective report reflecting more severe symptoms in tertiary care.[28,29] This study represents an improvement in sample generalizability over these 2 previous studies, because the previous studies recruited families participating in a psychological intervention trial for RAP, whereas we recruited directly from medical care. Families/patients who seek or accept psychological treatment for pain disorders are not typical of this population.[30]

We found no significant differences between the CGI and CP groups in child diary-reported pain and stooling characteristics. In contrast, we found that mothers retrospectively reported higher maximum pain intensity in the CGI group than the CP group, and although not quite statistically significant, also perceived their child's pain as more frequent with a small-to-moderate effect size ($d = .35$). This pattern of group differences in maternal but not child perspectives extends our previous findings that mothers who sought tertiary care view their child as more functionally disabled by abdominal pain than mothers who sought only primary care, whereas children's report of their functional disability did not differ between groups.[19] Our results are also congruent with observations made in the 2 previous pediatric studies by using different methods. In the Ball and Weydert study,[28] children's diary data yielded no differences between CGI and pediatrics groups, whereas in the Robins et al retrospective study, mothers in a CGI group reported greater pain in their children than in a pediatrics group.[29]

Conclusions based on our symptom data are limited partly by the inability to ensure that the 2-week diary period was representative of children's typical gastrointestinal symptoms and functioning. However, the majority of children in both the CGI and CP groups kept the diary during the school year (ie, likely representative of the usual stressors they faced), and the concern for unrepresentativeness would not be expected to affect group comparisons. It also is possible that knowledge of study participation may have impacted children's symptom reporting during the 2-week diary period. However, the clinical utility of the diary in children with RAP has been shown previously,[31] and again this potential limitation should not

differentially affect the 2 groups. That said, these limitations as well as the results of the other 2 pediatric studies warrant future research comparing prospective diary data from both child and parent, and particularly comparing diary data with retrospectively reported data by the same reporter and covering the same time interval.

Although the cost differential between primary and tertiary IBS care has been documented in adults, to our knowledge our study is the first to examine the differential cost of evaluating FAP/IBS in tertiary versus primary pediatric care. Our results reveal a fivefold difference in total cost of evaluation (excluding endoscopy) between primary and tertiary care (Table 5). Including the costs of endoscopy increases this differential to ninefold. Cost of tertiary care was significantly greater than primary care in almost all areas of medical evaluation (blood work, stool studies, breath testing, and diagnostic imaging), with the largest effect size for differential cost of blood work and a large effect size for diagnostic imaging cost (Table 5). Calculation of cost did not include indirect costs (school absences, parents' missed days of work, etc), which also may be higher in tertiary than primary care.

The already marked cost differential found in this study is likely an underestimate because we did not have access to the pediatrician charts for those in the CGI group. Therefore, none of the cost of any primary care evaluation occurring before the tertiary care evaluation could be included in calculation of cost for the CGI group. It is also possible that cost of evaluation was underestimated in the CP group given that only the most recent 6 visits were included in the chart review. However, it seems unlikely that the cost of any additional testing that was missed in the CP group would outweigh the cost of testing done by the pediatrician before referral to a gastroenterologist for the CGI group.

We anticipated that cost of evaluation would be related to gastrointestinal symptoms as has been described in the adult population with IBS.[13,31] However, cost of evaluation in neither the CGI nor CP groups was predicted by child- or mother-reported symptoms (including pain location, frequency, severity, and interference with activities, stool frequency and characteristics). The American Academy of Pediatrics Subcommittee on Chronic Abdominal Pain (2005) has recommended that children with abdominal pain who lack alarm signs/symptoms and have a normal physical examination (such as all our participants) be evaluated within primary pediatric care with testing being limited to evaluation for fecal occult blood determination.[7] By definition, none of the testing conducted changed the diagnosis in any of our participants, indirectly supporting the subcommittee's recommendations.

CONCLUSIONS

The cost of evaluation of children with FAP/IBS is exponentially higher when conducted by a pediatric gastroenterologist versus a pediatrician, and this cost is not related to the (child-reported) frequency or severity of the abdominal pain, how much the pain interferes with the child's activities, or stooling characteristics. Indeed, child self-report of pain does not differ between children seen by a pediatric gastroenterologist versus a pediatrician, but mothers seeking tertiary care evaluation perceive their child's pain as more severe. We speculate that parental concern about symptoms may be a primary factor driving tertiary care evaluation, suggesting that more attention needs to be placed on addressing parental perception of and response to children's symptoms rather than the symptoms themselves. Although we acknowledge that nonmaternal factors also may play a role in pediatrician referrals to gastroenterologists, pediatricians may be able to effect significant cost containment by attempting to address parental concerns and limiting referrals to tertiary care unless alarm signs or an abnormal examination occur.

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Abbreviations

RAP	recurrent abdominal pain
FAP	functional abdominal pain
IBS	irritable bowel syndrome
CGI	children evaluated by a gastroenterologist
CP	children remaining under care of pediatrician
VAS	visual analog scale

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TABLE 1

Description of Study Sample

	CGI (*n* = 46), %	CP (*n* = 43), %
Female	71.7	65.1
Race/ethnicity		
White, non-Hispanic	69.6	69.8
Black, non-Hispanic	15.2	11.6
Hispanic	15.2	16.3
Asian	0.0	2.3
Educational level of the mother		
Less than high school, high school diploma, or GED	13.0	11.6
Vocational school or some college	45.7	27.9
College graduate or some graduate school	32.6	46.5
Graduate/professional degree	6.5	14.0
Other	2.2	0.0
Insurance status		
Medicaid/CHIPS	15.2	11.6
HMO/PPO	76.1	76.7
Unknown	8.7	11.6

CHIPS indicates children's health insurance programs; HMO, health maintenance organization; PPO, preferred provider organization.

TABLE 2
Group Comparison of Child-Reported Pain and Stooling Characteristics

	CGI (*n* = 46)	CP (*n* = 43)	*P*
VAS rating of pain severity over 2 wk, mean ± SD, mm	11.5 ± 11.2	12.4 ± 12.0	.70
Reported pain episodes (≥10 mm) over 2 wk, mean ± SD, *n*	11.3 ± 9.3	11.3 ± 10.4	.99
VAS rating of maximum reported pain, mean ± SD	53.6 ± 28.7	57.5 ± 28.5	.52
Location of pain, %			
Epigastric	22.7	44.2	
Periumbilical	47.7	25.6	.05
Hypogastric	29.5	30.2	
Percentage (± SD) of time child reported pain interference with activities			
No interference	77.5 ± 20.0	75.1 ± 21.8	.38
A little interference	16.7 ± 14.2	17.5 ± 14.4	.44
A lot of interference	4.1 ± 6.6	5.8 ± 8.3	.37
Unable to participate in activities because of pain	1.7 ± 6.2	1.6 ± 3.4	.97
Interference rating (0–3) for all pain episodes, mean ± SD	0.8 ± 0.5	1.0 ± 0.5	.16
Bowel movements per day, mean ± SD	1.0 ± 0.4	0.9 ± 0.4	.33
Days with no bowel movement, mean ± SD	2.8 ± 2.6	3.7 ± 2.9	.15
Percentage of stools rated as watery, mean ± SD	5.8 ± 10.9	5.0 ± 7.3	.68
Percentage of stools rated as mushy, mean ± SD	16.1 ± 16.5	13.8 ± 20.1	.56
Percentage of stools rated as formed, mean ± SD	63.4 ± 25.9	60.5 ± 28.2	.62
Percentage of stools rated as hard, mean ± SD	14.7 ± 19.6	20.7 ± 25.0	.22

TABLE 3
Group Comparison of Retrospective Mothers' Report of Child Pain

	CGI (*n* = 45)	CP (*n* = 43)	*P*
Mothers' estimate of pain frequency per month, mean ± SD	10.7 ± 11.5	7.2 ± 8.0	.10
Mothers' estimate of worst pain intensity (1–10) in previous year, mean ± SD	7.4 ± 1.8	6.4 ± 2.0	.01
Mothers' indication that pain interferes with activity, %			
Yes	82.2	74.4	.37
No	17.8	25.6	—

TABLE 4
Percentage of the Sample Receiving Diagnostic Tests According to Group

	% of CGI (*n* = 46)	% of CP (*n* = 43)
Blood work		
White blood cell count	43.5	60.5
Hemoglobin	45.7	60.5
Erythrocyte sedimentation rate	30.4	14.0
C-reactive protein	23.9	4.7
Alanine aminotransferase	43.5	16.3
Aspartate aminotransferase	45.7	16.3
γ glutamyl-transpeptidase	15.2	2.3
Alkaline phosphatase	43.5	16.3
Total bilirubin	39.1	16.3
Direct bilirubin	10.9	0
Amylase	17.4	0
Lipase	15.2	0
Blood urea nitrogen	45.7	16.3
Creatinine	43.5	16.3
Inflammatory bowel disease markers	4.4	0
Helicobacter pylori antibodies	23.9	16.3
Urine tests		
Urinalysis	21.7	37.2
Urine culture	8.7	11.6
Stool studies		
Guaiac	23.9	4.7
Campylobacter, Shigella, Salmonella cultures	8.7	7.0
Giardia, Cryptosporidium antigens	13.0	4.7
Ova and parasites	19.6	11.6
Clostridium difficile toxin	2.2	0
Breath testing		
Lactose breath hydrogen test	6.5	0
Helicobacter pylori breath test	10.9	2.3
Diagnostic imaging		
Abdominal ultrasound	23.9	4.7
Plain radiograph of the abdomen	4.4	14.0
Upper gastrointestinal radiographic series with/without small bowel follow-through	17.4	0
Endoscopy procedures (only able to occur in tertiary care)		
Esophagogastroduodenoscopy or upper endoscopy	17.4	NA
Colonoscopy	2.2	NA

	% of CGI (*n* = 46)	% of CP (*n* = 43)
Flexible sigmoidoscopy	0	NA

NA indicates not applicable to the CP group.

TABLE 5

Group Comparison of Cost

	CGI (*n* = 45), Mean, $	CP (*n* = 43), Mean, $	*P*	Cohen's *d*
Blood work	341.68 ± 406.29	61.26 ± 99.68	<.001	.95
Urinalysis	25.04 ± 88.63	6.30 ± 14.22	.16	.30
Stool studies	73.13 ± 124.18	24.98 ± 80.23	<.05	.46
Breath testing	70.54 ± 177.92	10.98 ± 71.98	<.05	.44
Diagnostic imaging	294.13 ± 477.63	64.56 ± 183.69	<.01	.63
Excluding endoscopy	804.93 ± 908.29	168.07 ± 242.55	<.001	.96
Endoscopy procedures	732.30 ± 1755.96	NA	NA	NA
Including endoscopy	1536.84 ± 2377.68	168.07 ± 242.55	<.001	.81

Interpretation of Cohen's *d*: small effect size = .2; medium = .5; and large = .8.[32] NA indicates not applicable.