Painful Defecation and Fecal Soiling in Children

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ABSTRACT. Fecal soiling is a common complaint among school-age children. The fecal soiling is often accompanied by chronic constipation and so-called "idiopathic," "functional," or "psychogenic" megacolon, the cause of which is undetermined. The records of all children presenting to a pediatric gastroenterology clinic between 1981 and 1990 with difficult defecation were reviewed to determine the incidence of painful defecation and its relationship to chronic impaction and fecal soiling. There were 227 children; 74 were younger than 36 months of age and 153 were older than 36 months. Of the younger children, 86% presented with pain, 71% with impaction, and 97% with severe withholding. The younger children had painful defecation for a mean of 14 ± 9 (SD) months before presentation. Of the older children, 85% presented with fecal soiling, 57% with pain, and 73% with fecal impaction, and 96% exhibited withholding; the older children had difficult defecation for a mean of 56 ± 42 months before presentation. Sixty-three percent of the children presenting with fecal soiling had a history of painful defecation beginning before 36 months of age. Painful defecation frequently precedes chronic fecal impaction and fecal soiling in American children. Early, effective treatment of painful defecation in infancy might reduce the incidence of chronic fecal impaction and fecal soiling in school-age children. ***Pediatrics*** **1992;89:1007-1009;** ***infants, children, painful defecation, fecal soiling, fecal impaction, encopresis.***

Fecal soiling is common among young school-age children in the United States. Levine[1] found that fecal soiling accounted for 3% of visits to a large general pediatric clinic in Boston. It has been estimated that fecal soiling and fecal impaction account for 24% of visits to pediatric gastroenterologists.[2] Several theories have been proposed to explain fecal soiling in school-age children. Some have proposed that the soiling is "psychogenic,"[3,4] implying that soiling is a symptom of psychiatric disease; however, more quantitative studies have not confirmed serious psychological disease among these children[5] and psychotherapy alone is unsuccessful in treating them.[6] Thorough physical assessment of children who present with fecal soiling reveals that many of them have chronic constipation, often with fecal impaction and enlargement of the rectum and sigmoid colon.[7,8] The cause of the constipation has usually been termed "functional" because no specific disorders of colonic or anorectal physiology have been identified.[2,9]

We were struck by the number of children presenting to us with fecal soiling and fecal impaction who gave histories of painful defecation months or years before the onset of fecal soiling. This report is a review of the records of 227 children seen between January 1981 and January 1990 with the complaint of difficult defecation, fecal soiling, fecal impaction, or severe withholding behavior, to determine the incidence of painful defecation and the interval between the onset of painful defecation and presentation.

METHODS

All the children were treated at the Pediatric Gastroenterology Clinic at the State University of New York at Stony Brook, Long Island. The Pediatric Gastroenterology Clinic is a general consultation service and the treatment of fecal soiling was not promoted to the community as a specific interest. The patients were identified from a computerized system which stores discharge diagnoses for each patient visit.

All of the patients were managed by the same personnel—a pediatric gastroenterologist (J.C.P.), a pediatric nurse specialist (S.K.H.), and, when appropriate, a developmental psychologist (J.E.F.). Histories were obtained independently by at least two authors. Care was taken to obtain complete histories and parents were encouraged to describe their child's problem in their own language, key phrases of which were often recorded in our notes.

The records of children with neurological disease or severe cognitive disability were excluded from study.

Method of Physical Examination

A complete physical examination was performed on every patient. The anus and rectum were examined in the left lateral position. Throughout the treatment period, digital examinations were performed with sufficient frequency to ensure that fecal impaction and chronic constipation had been relieved and that treatment was progressing satisfactorily. Patients were treated in a manner similar to that described by Bodian et al[7] and, more recently, by Levine.[1] All of the children were followed up for long enough, often a year or more, to ensure that the diagnosis was correct and that confounding conditions had been excluded.

The children's records were reviewed for the following information: presence or absence of soiling (in children who were toilet trained), fecal impaction, withholding behavior, local perianal lesions, history of blood in stool, past or present pain at defecation, and age at toilet training. Not all of the records contained every item sought.

Definition of Terms

Children were considered toilet trained for defecation if the parent asserted that they had been successfully toilet trained without fecal soiling. Pain was judged to be present if the child complained of pain or when the child exhibited flushing, sweating, or screaming and crying during defecation or in anticipation of the act of defecation or if the child had painful lesions such as rectal fissures. Withholding behavior varied with the age of the child. Infants tended to extend the body and compress the gluteae with contraction of the external anal sphincter, usually with crying.

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Toddlers exhibited more complex behavior, including squatting, crossing ankles, stiffening the body, and holding on to furniture or their mothers, often with flushing, sweating, and crying. Sometimes toddlers hid during defecation. Withholding behavior in infants and toddlers appears to be a combination of pain avoidance motor activity during defecation and the expression of fear and anxiety in anticipation of painful defecation. By withholding behavior in older children, we mean infrequent and incomplete defecation, usually with historic and physical examination evidence of active muscular withholding. Fecal impaction was judged present in children who had an abnormal palpable fecal mass at digital examination of the rectum or by abdominal examination. The impacted feces ranged in consistency from that of glazier's putty to rock hard. Fecal soiling means the apparently uncontrollable passage of stool in inappropriate places, usually clothing, in a child after the age when toilet training should have been completed.

RESULTS

Two hundred twenty-seven children presented with difficult defecation during the 9 years between January 1981 and January 1990. One hundred three (45%) of the 227 children were girls and 124 (55%) were boys. Their ages ranged from 1 week to 18 years. Because the mean age at toilet training was 31±9 (SD) months, the children are considered in two groups: group 1, those younger than 36 months of age, and group 2, those 36 months or older (Table).

Group 1 comprised 74 children younger than 36 months of age; 43 (58%) were girls and 31 (42%) were boys. The mean age at presentation with difficult defecation was 22.6±8 months (1.9 years). Sixty-four (86%) of these children presented with pain, 50 (71%) presented with fecal impaction, and 71 (97%) exhibited severe withholding behavior. The mean of the longest interval between bowel movements was 6 days. Group 1 children experienced difficult defecation for an average of 14±9 months before presentation.

One hundred fifty-three children 36 months or older, group 2, presented with difficult defecation; their mean age at presentation was 88±40 months (7.3±3.3 years). Of these children 60 (39%) were girls and 93 (61%) were boys. Among the group 2 children for whom data were complete, 124 (85%) presented with fecal soiling, 85 (57%) presented with painful defecation, 110 (73%) presented with fecal impaction, and 145 (96%) exhibited withholding. The mean of the longest interval between defecation was 7 days among these older children. Group 2 children had had difficult defecation for a mean of 56±42 months (4.6 years) before presentation.

Of the 124 children who presented with fecal soiling, 63 (51%) had pain or a history of painful local lesions at presentation, 92 (74%) had fecal impaction, and 117 (94%) had a history of withholding. The mean age at onset of difficult defecation was 36±32 months. Seventy-five (63%) of the children with fecal soiling had a clear history of the onset of difficult defecation before the age of 36 months. The duration of painful defecation among the children who presented with fecal soiling averaged 63 months (5.25 years).

There were 22 Group 2 children who did not have soiling as a complaint; of these, 5 had painful defecation alone, 15 had pain and impaction, 1 had impaction alone, and only 1 complained of neither pain nor impaction. The history of fecal soiling was missing or ambiguous in the records of 4 of these children; of these, 3 presented with pain, 1 presented with pain and impaction; none presented with impaction alone or with neither pain nor impaction. Three Group 2 children were still in diapers at the time of presentation. There were 16 children 48 months or older who had never been successfully toilet trained.

TABLE 1. Characteristics of 227 Children Presenting With Difficult Defecation

	Age <36 mo	Age ≥36 mo
No.	74	153
Girls	43	60
Boys	31	93
Age at presentation, mo (mean ± SD)	22.6 ± 8.2	87.8 ± 39.6
Age at onset, mo (mean ± SD)	8.2 ± 9.5	34 ± 32
Duration of difficult defecation, mo (mean ± SD)	14.6 ± 9.4	56 ± 42
Soiling, No. (%)	NA*	124/146 (85)
Impaction, No. (%)	50/70 (71)	110/151 (73)
Pain, No. (%)	64/74 (86)	85/150 (57)
Withholding, No. (%)	71/73 (97)	145/151 (96)
Longest interval between bowel movements, d (mean ± SD)	6 ± 3.9	7 ± 4.5

* Not applicable.

DISCUSSION

Using data from the National Disease and Therapeutic Index, Sonnenberg and Koch[10] determined the number of visits to physicians for constipation in the United States between 1958 and 1986. A surprising finding was that the incidence of physician visits for children 0 to 9 years of age has doubled since 1958. The number of physician visits by children has increased steadily in the three 5-year intervals between 1972 and 1986, and almost all of the increase has been in children younger than 2 years old.

This study shows that more than 50% of school-age children who presented with fecal soiling or chronic fecal impaction had painful defecation before 36 months of age. The study also shows that a large number of children younger than 36 months experienced protracted periods of painful defecation. The signs of painful defecation and withholding expressed by the younger children in this study strongly resemble the complaints remembered by many of the parents of older children who presented with fecal soiling and chronic fecal impaction. We believe that these children represent a clinical continuum in which painful defecation early in life leads to involuntary withholding behavior as a normal pain avoidance response. Withholding, which consists of constriction of the external anal sphincter and associated muscles of the pelvic floor and the gluteae, results in ejection of the fecal mass out of the rectal ampulla back up into the rectosigmoid, where progressive desiccation and enlargement of the fecal mass occurs. It is known that distention of the rectum in a patient with a rectal fissure causes relaxation of the internal anal sphincter, which is followed by reflex contraction and elevation of anal canal pressure by 20 to 30 mm Hg above resting.[11(p 94)] This may facilitate expulsion of feces

into the sigmoid. Eventually the rectosigmoid becomes chronically distended, the sigmoid colon becomes enlarged and elongated, and the anal canal may become effaced.[7] In many cases fecal soiling appears to be due to the leakage of liquid feces and mucus around a large piston-like fecal mass; in other cases fecal soiling appears to be due to incomplete defecation, in which constriction of the anal sphincters cut through the partially extruded fecal mass, propelling part of it into the clothing and ejecting part of it back up into the rectosigmoid. Parents frequently described a pattern of progressively infrequent defecation before the onset of nearly daily soiling. Typically, after a period of daily painful defecation, the child would begin to skip a day between bowel movements, then 2 days, then 3 days and so on until by school age the child had developed a pattern of fecal soiling and very infrequent defecation of very large fecal masses. It is our conclusion that most of the severe chronic constipation and fecal soiling encountered in these children can be understood in biological terms as the consequence of repeated withholding as the painful consequence of defecation. This concept is supported by the manometric data[2,9,12] which show either normal defecation dynamics or increased anal tone (sometimes with paradoxical constriction of the external anal sphincter) and diminished rectal sensitivity. These findings are consistent with the interpretation that "learned" pain avoidance results in chronic outlet obstruction and the defecation patterns observed in these children.

We can only speculate why such a large number of young children experience persistent painful defecation. There is some evidence that some parents and many physicians consider three or fewer bowel movements per week "within the normal range."[13] There has been confusion about what constitutes significant constipation among children.[14] However, recent quantitative studies[15] now allow an accurate definition of normal stool frequency,[16–18] weight,[16,17] and consistency.[17,19] These studies show that, after the first year of life, bowel frequency is narrowly scattered around 1.4 ± 0.6 bowel movements per day. Weaver and Steiner[17] found, surveying all the 350 children aged 1 through 4 in an English general practice, that 96% of the children had bowel movement frequencies ranging between 3 times a day and once in 48 hours; of the ". . .only 20 children (6%) [who] opened their bowels less than once a day—seven had had treatment for constipation, six had passed blood in the stool, two had developmental delay and one has had a small bowel resection as a neonate." Another factor may be ineffective treatment.[1,6] Because of fear of "laxative habit," many of the children in this study had had laxative treatment for only a few days at a time or they received "stool softeners," the efficacy of which has not been established.[20] In the United States all laxatives are over-the-counter, nonprescription drugs; none are approved for use in children younger than 2 years of age except under the direction of a physician. Existing labeling is confusing to parents because the required warnings may lead the parent to doubt the safety of use for periods necessary for the effective treatment of pain-associated withholding in young children.

The clinical observations reported in this study suggest that painful defecation is probably a more important factor in the etiology of fecal soiling among school-age children than is generally recognized. If this observation is correct, then early effective treatment of painful defecation in infants and toddlers should reduce the incidence of fecal soiling in children.

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