Functional constipation in children: which treatment is effective and safe? An evidence-based case report

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ABSTRACT

Introduction: Constipation is a frequent childhood complaint. 90% to 95% of the time it is characterized as a functional type. Chiropractic is a natural alternative frequently chosen for children with constipation. The purpose of this case report is to evaluate the safety and efficacy of the chiropractic adjustment vs the use of laxatives in the treatment of functional constipation. **Case report:** A 21- month female infant presented at the clinic with chronic constipation for the past 15 months. She had been on laxatives for the last 14 months. After the first chiropractic adjustment, the bowel movement improved to once every day or second day. **Methods:** The search was done on Medline via Ovid and on Pubmed. **Discussion:** The evidence point to the conclusion that laxatives are insufficiently tested for childhood constipation for safety, efficacy and side effects. The majority of patients treated in chiropractic showed improvement immediately after the first visit. **Conclusion:** Chiropractic experience-based practice showed positive results in functional constipation. Children and infants with constipation as with other conditions should be treated regarding all aspects of their health.

Key Words: evidence based case report, chiropracti,; manual therapy, constipation, children, laxative, safety, effective

Introduction

Constipation is a common gastrointestinal problem in children, with a prevalence of 3% in the Western world.[1] Constipation is functional up to 90% to 95% of the time, which means that there is no underlying pathological condition. In 2006, the criteria for functional constipation in children were updated in the new Rome III criteria (Table 1).[2] The first step of treatment may consist of parental education in terms of dietary advice and behavioral modifications. If there is no rapid change in the condition, common medical clinical practice to treat children with constipation is to prescribe drugs, such as laxatives.

A study of Vlieger et al. showed that 36,4% of children with functional constipation opted for alternatives like acupuncture, homeopathy, osteopathic and chiropractic manipulations, or even spiritual and psychological therapies.[3] The chronicity of this condition is debilitating, and should be prevented. It may lead to distress and repercussions on the family's quality of life. Moreover, it puts the growing child at risk of missing developmental milestones, and suffering emotional and physical disturbances that can have consequences later in childhood and adulthood. Therefore, it is important to help these children return to health and normal bowel movements as soon as possible.

Symptoms must be present for at least 2 months

Presence of 2 or more of the following:
Two of fewer defecations in the toilet per week
At least one episode of fecal incontinence per week
Stool-retentive posturing
Painful or hard bowel movements
Presence of a large fecal mass in the rectum
Large diameter stools that may obstruct the toilet

Additional criteria:
No evidence of organic etiology
Criteria insufficient to indicate irritable bowel syndrome

Table 1. Rome III criteria

This evidence based case report[4] is related to the case of a child who suffers from constipation. The child was successfully treated using an overall health approach and chiropractic manipulations.

Case Report History

A female infant of 21 months presented at the clinic with episodes of constipation for the past 15 months. The problem coincided with the introduction of solid food at six months old. The child's bowel movement occurred at intervals of five to six days. Her mother described her child's feces as "hard to the touch." The child appeared to strain excessively during the expulsion phase, and would sometime cry out in pain. On two occasions the child had rectal bleeding attributed to the hardness of the fecal matter.

The child's birth history revealed that she was delivered vaginally after 12 hours of labor without drugs and complications. She was the mother's first-born child and was full term at 38 weeks weighing five pounds and 14 ounces.

Her APGAR scores were 9-9 at birth at one minute and five minutes respectively.

The child was breastfed until she was four months old and had been given formula until she was one year of age. She started drinking cow's milk at one year of age. The mother reports that her daughter started to be constipated following the introduction of solid food at six months old.

The family seemed to have generally healthy approach treating the child's constipation. They followed a series of recommendations for treating constipation, such as: increasing fluid intake, taking prune juice, increasing fiber and encouraging the child through movement of the lower limbs and physical activities. After an unsuccessful month (at the age of seven months), the pediatrician recommended oral laxatives (Lax-A-Day: polyethylene glycol 3350). After taking the laxatives daily, the bowel movement became somewhat normal in frequency. At 20 months old, the mother tried to stop the medication, but the constipation came back immediately, so she reinitiated administration of the laxatives.

Examination
During the visual inspection, the child appeared to be a healthy 21-month-old girl, with appropriate motor and verbal developments. The abdominal examination revealed a belly with no tenderness or obvious masses during palpation.

Upon visual examination, no anomalies were visible to the naked eye, either to the skin or the position of bony landmarks. Static and motion vertebral palpation revealed subluxations at various spinal levels. In the cervical spine, there was lack of mobility at C2 in left lateral flexion and right rotation. Palpation of the thoracic region revealed a subluxation in extension at T4. There was increased tonicity in the right quadratus lumborum and the right gluteal muscles. The mobility of the right sacroiliac was moderately decreased, suggesting a postero-inferior sacroiliac subluxation. The mobility of L5 in right rotation was diminished. The chiropractic diagnosis of vertebral subluxations associated with constipation was posed.

Treatment
Informed consent was obtained from parents before initiating the treatment plan. Vertebral adjustments were performed using chiropractic Diversified Technique using modifications appropriate for the child's age and development. The technique was applied to the C2, T4, L5 vertebral segments, and the sacroiliac joints. The frequency of treatment was two times a week for the first four weeks. The prognosis was 50% improvement of the symptoms after one month of treatments. Re-evaluation was conducted after 10 visits. The schedule of treatment was decreased thereafter to a frequency of once a month considering that the condition and the vertebral function were normalized.

Reinforcing the family's current healthy habits, additional nutritional and health advice was given to the mother. The taking of probiotics supplement daily was recommended on the initial visit. However, the mother had not started giving probiotics to her daughter until one month after the first treatment. The mother stopped giving her daughter the laxatives immediately after the first visit.

Outcome
Following the first chiropractic treatment, and with no further laxatives, the bowel movement improved to once every day or second day. There was no adverse reaction to adjustment reported at this point.

The chronology of events is outlined in Table 2.

Formulating the question
Idiopathic constipation is the most common gastrointestinal complaint in children. One may question the efficacy of laxatives knowing that "[…] only 50% of all children [on medication] for 6 to 12 months are found to recover and are successfully taken off laxatives".[1] Moreover, it is likely that the underlying cause of constipation is not corrected

Year	Milestone
June 2016, 6 months old	Introduction of solid foods: the mother noticed constipation/a reduction in bowel movement.
During the month of June	The mother tried dietary advice: increasing fiber, fluid and prune juice.
July 2016, 7 months old	Pediatrician prescribed laxative.
August 2017 at 20 months old	The mother discontinued laxatives for two weeks with reoccurrence of constipation; The mother resumed administering her daughter's laxatives.
30th September 2017 at 21 months old	First chiropractic visit; The mother stopped laxatives after the first visit; Bowel movements improved to once a day or two days.
End of October 2017 at 22 months old	The child started taking probiotics on a daily basis.
December 2017 at 24 months old	The child was under chiropractic care once every 4 weeks with no symptoms of constipation.
February 2018 at 26 months old	The child is still under chiropractic care once every 4 weeks and no reoccurrence for 5 months.

Table 2. Timeline

when children are prescribed drugs to promote bowel movement. Is the prescription of laxatives evidence-based or is it simply habitual clinical practice? The perpetuation of this intestinal condition and the parents' desire to find a better alternative to medical treatment brings them to consult other health professionals. The clinical question can be formulated as such: Which option between laxatives or the chiropractic approach would be a more effective and safe treatment for functional constipation?

Methods

The search was conducted on Medline via Ovid. The MeSH headings "constipation and laxatives" and "safety and laxatives" were used by selecting Map Term to Subject Heading. It resulted in 982 and 241 articles respectively. By combining the first search with the second one, it resulted in 60 articles. This combination resulted in many articles on different types of laxatives and on various profiles of patients. To narrow the search the MeSH heading "child and constipation" was used. In combination with the previous heading, this last search gave 14 articles. These articles were comprised of two meta-analysis, seven reviews of literature, one randomized controlled trial, one clinical trial, one single-center open-label study and one case report. Of the 14 retrieved articles, four were directly relevant to our study. We searched also on PubMed to see if there were other interesting papers about the safety of constipation medications. We used the MeSH heading "constipation drugs effectiveness AND safety AND children". It resulted in 17 articles. Only one literature review by Wering et al. and one survey by Vlieger et al. were relevant to our subject.

On Medline via Ovid, we used the MeSH heading "constipation and chiropractic". We used the parent term "exploding" to be sure that other subheading in the same tree, such as manipulation, manual therapy and chiropractic manipulation, would be included. It resulted in three papers. These consisted in one case-series, one case control and one review. Of which, the review of Alcantara et al. was relevant. Using PubMed with the MeSH heading "non pharmacologic treatments AND constipation", resulted in 16 articles, but only one was relevant to chiropractic: a systematic review by Tabbers et al.

The heading of "safety AND chiropractic AND children" on Medline resulted in one retrospective study that was relevant. The same MeSh heading used on PubMed resulted in 34 studies. Only the review of Todd et al. was relevant.

The Evidence

Laxatives

The literature review by Pijpers et al. looked at the currently recommended treatments of childhood constipation. The medical treatments proposed were laxatives (polyethylene glycol, lactulose, etc.) and dietary fibers. Only one study compared the effect of laxatives to placebo on children in the literature: the study showed that laxatives (polyethylene glycol) more effectively increased defecation frequency in the short term than the placebo. However, the study concluded that laxatives are insufficiently tested against placebo and other alternatives. Pijpers et al. states, "[…] it should be considered unethical to treat children without prior evidence for a beneficial effect of this treatment [the laxatives]." The authors noted that there was a lack of understanding of childhood constipation. Additionally, there was a lack of clarity in the effects of the laxatives, making it hard for the reviewer to compare the various results.[5]

Another review by Wering et al., evaluated whether constipation drugs were effective and safe. The article cautions that the safety of medication is difficult to estimate because the side effects were similar to the symptoms of constipated children. The side effects of laxatives were diarrhea, bloating, flatulence, nausea and abdominal cramping. An additional problem was that, before the age of two, children were not able to report verbally any side effects. The authors noted that only a small number of infants (0 to 2 y. o.) were investigated. In regards to the effectiveness of laxatives, there was a lack of studies with placebo-controlled trials on children. The main reason was that parents did not want their child to be treated with a placebo. The authors concluded that there was insufficient data to use laxatives in clinical practice for children: "(…) there should be large placebo-controlled trials on children with constipation to look at the safety, efficacy and side effects".[2]

A literature review by Tabbers et al. and a meta-analysis by Chen showed that 50% of children using laxative therapy had side effects such as abdominal pain, bloating, flatulence, diarrhea, nausea and a foul odor. They explored the issue that there were no studies looking at the possible long-term adverse effects in using these drugs. The authors postulate that changes in electrolyte balance, damage of the gastro-intestinal system or habituation could be possible side effects of long-term laxatives usage.[1,10]

Chiropractic approach

Alcantara et al. reviewed the literature on the chiropractic care of children with constipation. This consisted of 14 case reports, one case series and one review of literature. The studies totaled 17 children from two weeks to eight years old struggling with constipation. The medical treatments, consisting of laxatives, suppositories, increased fluid intake and high fiber diet, were reported to be ineffective by the parents. The studies showed improvement of constipation after chiropractic care. The majority of which showed improvement immediately after the first visit. The studies utilized a variety of chiropractic manipulative therapy, the most common of which was the Diversified Technique (N=9).[6]

Tabbers et al. systematic review concerning non-pharmacologic treatments for pediatric constipation summarized the evidence for treatments like fiber and fluid intake, physical movement, probiotics, behavioral and alternative therapy. They noticed the lack of double-blind randomized controlled trials (RCTs) involving alternative therapy like the chiropractic approach. The author expressed that it was difficult to blind patients to their treatments when assessing the efficacy of manipulation. The study stated that the recommendation of such treatment has not been evaluated.[7]

A retrospective study of 781 pediatric patients (three years old or younger) who presented at a clinic of the Anglo-European College of Chiropractic in the United Kingdom between 2002 to 2004 showed 1% of patients reporting mild adverse reactions to chiropractic treatment lasting <24 hours (none requiring hospitalization). The parents reported the side effects that could have been only "perceived" as such (for example, increased irritability and crying).[8]

Another literature review looked at adverse events due to chiropractic or other manual therapies for infants. No deaths were associated with the treatments and seven serious events can be explained by a preexisting pathology or the utilization of inappropriate techniques.[9]

Conclusion

The guidelines for the treatment with pharmaceutical laxatives concerning children's constipation are medical experience-based rather than evidence-based as Wering mentioned.[2] The effectiveness of laxatives is not showed in placebo-controlled trials, and does not warrant the widely accepted usage. We observe that there are side effects in using laxatives for children. Furthermore, we have no data concerning the long-term adverse effects on these children. The overall evidence for safety and effectiveness of laxatives is lacking.

In light of the reviewed literature, the prescription of pharmaceutical laxatives to children does not appear justified when the use of alternative, non-invasive, effective and natural treatments appear safe and effective for one of the most prevalent and long-lasting pediatric gastrointestinal disorders.

The search revealed a sizeable retrospective study as well as individual chiropractors who reported on the subject of children constipation in case reports. The children reacted positively with alleviation of their symptoms of constipation after chiropractic care. Chiropractic experience-based practice showed positive results in functional constipation. It is, therefore, a reasonable clinical guideline that chiropractic care should be tried as a first option. Moreover, chiropractors may also give lifestyle recommendations that can benefit the patient on the long-term.

Chiropractic care in children is safe. Adverse events are rare, and generally mild or non-related. Chiropractors are well trained to conduct extensive patient histories, perform thorough examinations that can rule out anatomical or neurological anomalies, and can diagnose to appropriately select a technique that will prevent the risk of adverse events. Children and infants with constipation should be treated with chiropractic care regarding all aspects of their health. The chiropractor is a health professional that can give relevant advice in global health to promote the wellbeing of all children.

The mother in this case was very satisfied to have tried a natural and effective alternative to laxatives. She experienced a natural approach with good result rather than the trialed pharmaceutical which did not have a satisfactory result. She also discovered that chiropractic care could help her daughter with her overall health. She understood that we were not treating only the symptoms of constipation but also the whole person while alleviating the interference on her daughter's nervous system so that her body could function at its best.

It appears from the evidence provided that chiropractic and laxatives is more experientially based than randomized controlled trials based. Knowing that the entry level of evidence start with some clinical experience, we should accept this and look at all the evidence that we have. It is our opinion that the first intervention favored should always be less invasive with fewer adverse effect. In this view, the evidence showed that chiropractic should be the first option in the treatment of chronic constipation.

In this paper, an experienced based case report is considered the first level of evidence. However, we should note that for the time being all the reporting of both chiropractic and laxatives is experientially or clinically based information.

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