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Chapter 6

Loperamide suppositories in an adolescent
with childhood-onset Functional Non-
Retentive Faecal Soiling (FNRFS)

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Introduction

Encopresis is characterized by the voluntary or involuntary passage of a quantitatively normal bowel movement in the underwear after the age of four. In the majority of patients, encopresis is the result of constipation. However, in our practice, 20% of children experience encopresis as a single complaint, without any signs of constipation. These children have a normal defecation frequency, no palpable abdominal/rectal faecal mass on physical examination and a normal colonic transit time. Laxatives have no or an adverse effect in these children (1).

Recently, encopresis in the absence of signs of faecal retention has been classified as Functional Non-Retentive Faecal Soiling (FNRFS) by the new paediatric Rome-II criteria (2). The treatment of these children is often disappointing, with only 29% of the patients with FNRFS cured after 2 years of intensive treatment (3). In contrast to earlier beliefs (4) recent data show that 24% of children with FNRFS do not overgrow their encopresis during puberty and still experience encopresis when reaching adulthood (5). This considerable amount of patients with encopresis after the age of 18 justifies the search for treatment options for this patient group.

The symptomatology of children with FNRFS resembles that of adults with idiopathic faecal incontinence; incontinence without a known underlying cause. In most adult patients however, faecal incontinence is caused by trauma (after delivery) or by ageing processes. In adulthood faecal incontinence, loperamide is a well known and frequently used medication. A study in adults with chronic diarrhoea and faecal incontinence showed that the oral application of loperamide, an opioid agonist, resulted in significant improvement of continence (6).

Here, we describe a 20-year-old male with childhood-onset, longstanding FNRFS who dramatically improved after rectal application of loperamide.

Case Report

A 20-year old male with primary encopresis was treated and followed at our outpatient clinic since the age of 13. He passed meconium within 24 hours after birth and never experienced any defecation problems during his toddler years. However, at the age of 9, despite a normal defecation frequency, he was still not fully toilet trained. He had no other gastrointestinal complaints and he had a normal appetite. He was on treatment with a regimen of various kinds of laxatives, prokinetics and mineral oil without any improvement of his defecation problems.

He was referred to our motility unit to exclude Hirschsprung's disease. At that time encopresis occurred daily. The majority of 'accidents' occurred during physical exercise and stressful moments (birthday, school exams). He had a normal urge to defecate, but suffered from urgency resulting in faecal incontinence. Stool consistency was always normal. He also complained of nocturnal enuresis twice a week, whereas daytime enuresis did not occur. Abdominal and rectal examination revealed no signs of faecal retention. Apart from his father suffering from idiopathic faecal incontinence, his family history was negative regarding gastrointestinal disorders. He was not mentally retarded (IQ:89), although he received specialized education, and psychological examination revealed no mental disorders. Anorectal manometry at the age of 12 showed a normal resting pressure, normal squeeze pressure, normal expulsion profiles, and a normal threshold for first sensation (25ml). A normal anorectal inhibition reflex excluded Hirschsprung's disease. Total colonic transit time measurement, using the Metcalf method (7), was 33.6 hours, well below the upper limit of normal transit (62 hours) (8).

Discontinuation of the longstanding, intensive laxative treatment did not alter his defecation pattern. Subsequently, at the age of 14, 5 sessions of biofeedback training were given without clinical improvement. Hereafter, a strict toilet training program (3 times per day for 5 minutes) was recommended without the use of any medication. The patient visited our outpatient clinic every 6 months for follow up. The symptoms of encopresis, however, never resolved during the 6 years of follow-up.

Based on adult literature showing beneficial effects of loperamide on faecal continence, a trial of loperamide was started at the age of 20. Written informed consent was obtained. Before the actual treatment, a 1-month bowel diary showed a defecation frequency of 20 times per week (on the toilet) with daily encopresis (in his underwear).

To avoid systemic side effects (dizziness, headache, abdominal discomfort, nausea and vomiting) we administered loperamide-suppositories 10 mg 2 times per day (6). After three days he developed constipation and consequently the dose was lowered to 5 mg loperamide twice daily. The next three weeks his defecation frequency was 14 times per week without any episodes of encopresis. Stool consistency was normal. No side effects were reported. Discontinuation of the medication immediately resulted in a relapse of encopresis.

Currently, 18 months after initiation of therapy, our patient uses loperamide 5mg daily and remains continent without any side effects.

Discussion

Encopresis in children older than four years of age is a frequent reason to consult the paediatrician. Despite the high prevalence of encopresis, 1-2% in otherwise healthy school-children, a first visit to the paediatrician, as in our patient, is frequently delayed because of shame and cultural taboos (9).

In our motility unit, 80% of children with encopresis fulfil the criteria for childhood constipation. In contrast, in the remaining 20% of patients with encopresis no criteria for constipation can be identified. These children have been classified as Functional Non-Retentive Faecal Soiling (FNRFS) by a group of experts (2).

Earlier opinions state that encopresis will resolve spontaneously during adolescence, however in our experience encopresis can persist even after primary school. Furthermore, there are no data in literature to support the statement that FNRFS resolves spontaneously during puberty. Long-term follow-up of FNRFS patients shows that about one in four patients remain encopretic when reaching adulthood (5). This considerable percentage underscores the importance of a form of therapy for this patient group with longstanding, childhood onset-FNRFS.

Recently, we observed the occurrence of rectal contractions accompanied by unnoticed faecal loss during barostat studies in some of these patients (submitted). These rectal contractions were not followed by an adequate increase in anal sphincter pressure preventing faecal loss. These observations show resemblance with manometric studies in idiopathic faecal incontinence and chronic diarrhoea accompanied by faecal incontinence in adults (10).

Loperamide, an opioid-receptor agonist, which inhibits peristaltic movement by reducing the release of acetylcholine and prostaglandin, during distension *in vitro* (11) is a well known therapy for faecal incontinence in adulthood. Furthermore, it is a well established agent in the treatment of diarrhoea accompanied by faecal incontinence and idiopathic faecal incontinence in adults. Loperamide has been shown to increase anal sphincter pressure, possibly contributing to better sphincter function (6). Moreover, a clinical benefit of loperamide is reported in children with faecal incontinence resulting from neurological disorders or surgical procedures (12).

Because all therapy so far had been unsuccessful, we evaluated the effect of rectal loperamide in our, adult patient with longstanding, childhood-onset FNRFS (since he was 9 years of age). Immediately after initiation of loperamide 10 mg, our patient developed constipation. Decrease of the dose to 5 mg 2 times per day

resulted in a complete disappearance of the encopresis episodes with daily defecation and no side effects. During follow-up he experienced a relapse of complaints when discontinuing medication.

We like to stress the fact that the pathophysiology of faecal incontinence in adulthood is different compared to childhood FNRFS. Our patient was an adult when we first administered loperamide, nevertheless, he still experienced symptoms of a disease he acquired in childhood despite long lasting treatment.

Up until now, loperamide has not been prescribed for encopresis in childhood because it was always thought to be caused by constipation. Only recently it was suggested that encopresis in the absence of signs of constipation is a different entity: FNRFS. In adult faecal incontinence, with a different pathophysiology, loperamide has been used successfully for many years. It is therefore very interesting that a well known medication for a symptom in adulthood resulted in such a substantial effect in this patient with a childhood-onset disease in adulthood.

To our knowledge this is the first report of the potential effect of loperamide, an opioid-receptor agonist, in the treatment of longstanding, childhood onset-FNRFS. As we did not assess anorectal motility, we can only speculate on the mechanism of action of loperamide in our patient. Since he had a normal defecation frequency (on the toilet) and a normal stool consistency, the beneficial effect of loperamide was not due to its anti-diarrhoeal effect. Therefore, it is most likely that rectal application of loperamide reduced encopresis by increasing the basal internal anal sphincter pressure and/or decreasing rectal contractions.

Since we believe that loperamide could have a potential beneficial role in childhood-FNRFS, we recently started a large prospective placebo-controlled trial to further evaluate the potential benefit of rectal application of loperamide and the effects on rectal motility.

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