

CASE STUDY

Resolution of Nocturnal Enuresis in a 10-year-old Child Following Chiropractic Care to Reduce Vertebral Subluxation: A Case Report

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Abstract

Objective: To describe the chiropractic care of a 10-year-old boy experiencing frequent nocturnal enuresis (NE), otherwise known as “bedwetting”.

Clinical Features: The child suffered from long-term regular bedwetting.

Intervention and Outcome: The child received instrument assisted and drop table technique adjustments over a two month period. After four weeks of chiropractic care the child’s bedwetting ceased.

Conclusion: This case study adds to the growing body of literature that supports a possible link between chiropractic care and improvements in NE. Further research in this field is required to investigate this potential link.

Keywords: *Enuresis, nocturnal, bedwetting, child, chiropractic, vertebral subluxation*

Introduction

All children start life being incontinent of urine both by day and night. As neurological maturation occurs, voluntary control of the bladder is gained first by day and then by night.¹ Nocturnal enuresis (NE), better known as “bedwetting”, is defined as “the recurrent involuntary passage of urine during sleep by a child aged five years or older who has never achieved consistent night-time dryness.”¹

Bedwetting is associated with a host of additional problems for the suffering child including lower self-esteem and repeated treatment failure.^{1,2} Physical and emotional abuse

can occur due to parental disapproval and teasing by siblings and peers.¹ Treatment strategies attempt to minimize the negative impact of NE on the emotional health of the child.² Conventional management includes behavioural therapy, alarm therapy, and pharmacologic therapy. However there is a lack of evidence to support the efficacy of these conventional approaches, and they can take a significant length of time for improvements to occur.^{2,3}

As a result, parents turn to alternative therapies for the care of their child with chronic, recurrent NE such as in the provided case. In the interest of evidence-informed practice, we describe the chiropractic care of a child with chronic NE with positive outcomes.

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Case Report

History

A 10-year-old male presented to a private chiropractic practice in Tauranga, New Zealand suffering from long term NE, with a frequency of at least fortnightly episodes triggered by unknown factors. The child had never gone for more than two to three weeks without an episode occurring. Previous approaches to treatment included behavioural modification and alarm therapy, with no success. The patient reported considerable embarrassment associated with the NE and he was reluctant to sleep at friends' houses in case he 'wet the bed.'

A thorough history was taken which included birth history, milestones, and health history until present day. The history was unremarkable for delayed milestones, except for those associated with enuresis. Birth history and health history were unremarkable. A normal vaginal delivery was reported and there was no history of significant trauma, major illness, or emotional distress.

Examination

A physical examination was performed that included a postural examination, neurological screening including muscle strength tests, muscle stretch reflexes, sensory testing, cranial nerve testing, and a chiropractic examination for vertebral subluxations. The physical examination was unremarkable except for minor postural alterations and indicators of the presence of vertebral subluxations in the cervical and lumbopelvic spine. Subluxation listings were recorded at the C₁ and C₂ vertebral bodies (VBs) as well as the sacrum.

Intervention

Chiropractic care was provided using instrument assisted techniques (i.e., Activator Methods and Torque Release Technique) as well as toggle recoil and drop table techniques (see Table 1) to correct discovered vertebral subluxations. Subluxation findings persisted at the C₁ and C₂ VBs and sacrum. These segments were regularly adjusted during the initial stages of care. The child's initial care plan involved weekly visits over an eight week period. The child was adjusted at every visit and progress examinations were performed at four weeks and at eight weeks of care. No other forms of treatment (i.e., adjunctive therapies) were provided during this time and no significant changes were made to his normal daily routines.

Outcomes

At the four week progress evaluation, the patient's mother reported that her child had wet the bed once and on another occasion, her child woke up 'just in time' to make it to the toilet. At the eight week evaluation, the patient's mother reported that her child had not wet the bed since the single episode before the four week progress evaluation. The child now felt confident to stay away from home at friends' houses. The patient's mother also reported a positive change in her child's behaviour. Following this 2nd evaluation, the patient received chiropractic care characterized as "wellness" for the

following two years and reported no further episodes of bedwetting.

Discussion

The scientific literature documents that NE is a common genetically complex and heterogeneous disorder among children.⁸ Nocturnal enuresis can be primary or secondary. Primary nocturnal enuresis is bedwetting in a child aged 5 years or more who has never been dry for long periods of time. Secondary NE occurs when the onset of bedwetting occurs after a continuous dry period of more than 6-12 months.⁹ Its etiology is not completely understood and more is multifactorial.

In terms of behavioural problems, enuretic children have been found to have no marked emotional, social or behavioural problems to findings of 4.3 times increased psychological difficulties when compared to their non-enuretic peers.¹⁰⁻¹³ Consistently, studies have found the risk factors to be the male gender, younger age, family history and divorced parents.^{8, 14-17} The overall prevalence of NE and its prevalence in different age groups varies greatly in different countries, ranging from 2.3% to 25%.⁸ For the age group for the child described in this case report, NE among 6-11 year olds has been reported to range from 1.4% to 28%.^{14,18} The overall prevalence of enuresis in children aged 5-16 years from France¹⁹ was found to be 12.95% while in children aged 6-11 years from Saudi Arabia,²⁰ the prevalence was reported at 15%.

This case study reports the amelioration of NE in a ten year old male within 4 weeks of initiating chiropractic care. It adds to the growing number of case reports that suggest that chiropractic care may be beneficial for at least some children suffering from this childhood condition. By the age of ten this patient should normally be able to go through the night without wetting his bed. The diagnosis of NE is fairly straight forward based on the frequency and parental description of bedwetting. The patient had been experiencing frequent bedwetting episodes throughout his life up until the current age of ten when he initiated chiropractic care. This may suggest there is a correlation between the cessation of bedwetting and the chiropractic care that was delivered. This potential link is supported by a number of other case reports.^{3,21-32} However, further experimental evidence is needed to validate this link.

Nocturnal enuresis typically does not have an associated disease to cause the symptoms. Rather, there are two different mechanisms that explain the cause of bedwetting. Firstly, most adolescents have developed the pathway between the bladder and brain so it is thought that many adolescents suffering from nocturnal enuresis are very deep sleepers, so they are unaware that their bladder is full.² This may be due to abnormalities in neural integration within the micturition control centres in the central nervous system that mean they do not respond in a way that wakes the individual from their deep sleep when they need to urinate.

The second mechanism that has been postulated is that the presence of stool may cause enuresis by placing pressure on the bladder and reducing bladder size, or by triggering detrusor contraction through reflexogenic mechanisms.² There

is a growing body of evidence suggesting that spinal dysfunction has an effect on central neural processing and it has been suggested that spinal dysfunction may lead to altered afferent input to the central nervous system (CNS).³³ In 2008 Haavik and Murphy performed an experiment that explored whether spinal manipulation of dysfunctional cervical joints leads to alterations in central processing and sensorimotor integration.³⁴ Their findings suggested that spinal manipulation may restore functional ability by altering afferent input to the CNS. If this is the case it may impact on bladder control through modulation of spinal cord reflexes or central cortical or subcortical micturition control mechanisms.³⁵

It is beyond the scope of this case report to postulate with any degree of certainty about potential mechanisms that may have been involved in the changes observed in this patient. However, it is possible that changes in neural plasticity within the central nervous system micturition centres occur following chiropractic care may provide some semblance to explain the improvements observed.^{2, 33} Basic science studies would help to investigate potential mechanisms that may be involved in the changes observed, and experimental trials are required to further investigate a potential relationship between chiropractic care and NE.

Experimental studies will also help to rule out factors such as natural progression and placebo which may have played a role in the present case and other reported case studies. With this said, we caution the reader to not generalize the reported outcomes of this case report. In addition to spontaneous remission and self-limiting aspects of the natural history and placebo, confounding factors also include bias due to lack of a control group, subjective validation, and expectations for clinical resolution on the part of the patient challenges our ability to make cause and effect inferences with respect to the effectiveness of care.

Conclusion

This case study adds to the growing body of literature that supports a link between chiropractic care and improvements in NE. Experimental trials are required to investigate whether chiropractic care may play a significant role in improving NE in children.

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Table 1. Chiropractic Technique Descriptions	
Chiropractic Technique	Description
Activator Technique ⁴	A handheld, spring-loaded instrument that fitted with a stylus tip to deliver a site-specific low-force-type thrust.
Torque Release Technique ⁵	Utilizes a hand-held instrument called The Integrator™ is used with the capability of creating a torque and recoil release.
Toggle Recoil ⁶	With the application of a high velocity, low amplitude thrust followed by a quick release to the upper cervical vertebra, the resultant “recoil” allows the vertebra to oscillate into its proper position.
Thompson Drop Table Technique ⁷	The technique uses a special table with built-in “drop-piece” segments. With the application of a high velocity, low amplitude thrust to patient contact points, the table “drops” over a small distance.