ELSEVIER

Chiropractic management of a 5-year-old boy with urinary and bowel incontinence

Keith R. Kamrath DC, FACO*

Chiropractor, Private Practice, Hutchinson, MN 55350

Received 3 August 2009; received in revised form 11 September 2009; accepted 24 September 2009

Key indexing terms:

Spina dysraphism;
Urinary incontinence;
Fecal incontinence;
Meningocele;
Manipulation,
Chiropractic

Abstract

Objective: The purpose of this article is to describe chiropractic management of a 5-year-old boy with urinary and bowel incontinence.

Clinical Features: A 5-year-old boy presented with the primary symptoms of a complete lack of bowel and bladder control with prior surgical correction for lumbar meningocele, spinal lipoma, and tethered spinal cord. Examination revealed spinal and pelvic dysfunction.

Intervention and Outcome: Chiropractic treatment methods included using the Activator adjusting instrument and shortwave diathermy to the lumbar spine and sacrum. A total of 5 treatments were initially provided over a period of 4 weeks. After the initial treatment period, he was able to maintain satisfactory control of his bladder and bowel, day and night, for a period of approximately 6 months. A second course of treatments was initiated approximately 6 months later because of a recurrence of bladder and bowel incontinence. Four additional treatments were provided over a period of 4 weeks. This second course of treatment reestablished satisfactory control of bladder and bowel function.

Conclusion: For this patient, chiropractic care was successful in establishing satisfactory bladder and bowel control.

© 2010 National University of Health Sciences.

Introduction

Spina bifida is a birth defect in which the neural tube does not fully close, resulting in an open or imperfectly formed spinal cord. Neural tube defects, including spina bifida as one of the most common forms, occur in approximately 300 000 neonates each year throughout

the world.¹ Typical treatment of bladder and bowel incontinence related to spina bifida includes early intervention with medication,^{2,3} catheterization,⁴ enema,⁵ or surgery.⁶ Urinary and bowel incontinence occurs with myelomeningocele in 90% of cases.⁴ There is 1 case study⁷ that describes successful manipulative treatment of spina bifida occulta, but there are no available studies involving meningocele or similar condition. A large number of young adults diagnosed with spina bifida exhibit chronic bladder and bowel incontinence.⁸ The psychosocial impact of incontinence, including depression, anxiety, isolation,

* 125 Main Street South, Hutchinson, MN 55350. Tel.: +1 320 587 3888; fax: +1 320 587 3888.

E-mail address: kkamrath@hutchtel.net.

caregiver stress, and family stress, is an important consideration.^{9,10} The economic impact for the care of urinary continence is approximately \$16.3 billion annually.⁹ In addition, renal damage and renal failure can be sequelae of spina bifida as a result of long-standing bladder dysfunction.⁶ Bladder and bowel incontinence has biological, psychosocial, and economic effects on the patient. The purpose of this case report is to describe the chiropractic treatment and results for a 5-year-old patient presenting with urinary and bowel incontinence and spina bifida.

Case report

A father and mother brought their 5-year-old son in for assessment for the primary symptoms of a complete lack of bowel and bladder control. His father reported that his son had never had voluntary control over his bowel and bladder function since birth. His son wore absorbent underpants day and night, and the father was concerned about the implications of starting kindergarten without the ability to control bowel and bladder functions. The patient's mother reported that his bladder and bowel would "empty completely" without warning. The patient was also concerned about the need to wear absorbent underpants during the daytime and that other children teased him. The mother related she worried about the emotional development of her son. Other motor and sensory functions seem to be normal. He was able to run and play normally and had no complaints of pain. The patient's mother gave written permission to publish the patient's personal health information without divulging the identity of the patient.

Neurosurgical reports indicated that the patient was diagnosed at birth with an intradural, intramedullary spinal cord lipoma with tethering of the spinal cord affecting the L5 through S4 nerve roots. At approximately 2 months of age, the patient had a surgical procedure in which the lamina of L2-5 and the sacrum were exposed, an osteoplastic laminotomy at L3/4 was performed, the dura was retracted, and a 4.5 × 3.0 × 1.0-cm lipoma was removed from the sacral nerve roots. The spinal cord was also untethered during this procedure.

A preoperative magnetic resonance imaging of the lumbar spine revealed a meningocele and lipoma over the sacral nerve roots. This examination also revealed an abnormally low cord extending to approximately the S1 level. A recent magnetic resonance imaging of the lumbar spine revealed partial lumbarization of S1 that was more conspicuous on the left.

Physical examination revealed an alert, cooperative 5-year-old boy in no acute distress. He moved easily about the examination room and exhibited no discoordination, weakness, or spasticity. Heel and toe walking was normal. No sensory deficits were elicited. Deep tendon reflexes at the knee and ankle were +2 bilaterally. Lumbar and thoracic range of motion was full and pain-free. A healed surgical scar was visible in the midline from L1 to S3. Postural evaluation revealed a posterior and inferior positioning of the left ilium. There was also a left rotational fixation at L5. Joint dysfunction was assessed by evaluating symmetry of the pelvis with the patient in a standing and prone position and by assessing leg length in the prone position. Static palpation of spinal asymmetry, tenderness, and muscle spasm was also used.

The treatment plan consisted of treatments once per week for several weeks to correct the joint dysfunctions using the Activator adjusting instrument. The Activator instrument was applied in a cephalad line of drive at the left ischial tuberosity, left posterior superior iliac spine, and approximately 0.5 cm left of the midline at L5. In addition, shortwave diathermy was applied to the lumbar spine for 15 minutes per treatment. He began showing improved bladder and bowel control after approximately 2 treatments. After a total of 5 treatments, the patient was able to control his bowel and bladder during the day and at night and was able to discontinue wearing absorbent underpants. Because of the loss of his mother's employment, the patient discontinued treatment after 5 visits.

He maintained satisfactory control of his bowel and bladder for approximately 6 months and then gradually began having bladder and bowel incontinence again. His mother brought him back for treatment after he had persistent symptoms for approximately 1 month. She reported that his bowel and bladder would empty completely during the day and at night and that he needed to wear absorbent underpants again. She reported no intervening trauma, and the history and examination were essentially unchanged from his initial visit. Treatment at this time only used the Activator adjusting instrument. No shortwave diathermy was used during this second course of treatment. Once again, he began to have improved bowel and bladder control. Within 2 treatments, his mother reported that he was experiencing only trace amounts of urine or fecal material that would be involuntarily released. She stated that he also seemed to have more warning that his bowel/bladder needed to be emptied, so he could get to the bathroom before having an accident. After 4 treatments, applied 1 time per week

for 4 weeks, he was able to discontinue wearing absorbent underwear and wear normal underpants.

Discussion

Pediatric urinary incontinence can be categorized as organic (apparent structural or neurologic condition) or functional (no structural or neurologic abnormality can be identified). Organic causes of incontinence can be further subdivided into either structural or neurogenic causes.¹¹ Structural defects typically involve defects of the lower urinary tract. Neurogenic causes of urinary incontinence include spina bifida, sacral agenesis, spinal cord injury, cerebral palsy, and tethered spinal cord.¹² Given that the history of this patient includes meningocele, spinal lipoma, and tethered spinal cord, it is likely that the cause of his urinary incontinence was of neurogenic origin.

Sacral neuromodulation, the transcutaneous electrical stimulation of the sacral nerve roots, has been shown to significantly improve fecal incontinence as compared with a control group treated with medical therapy.¹³ Sacral nerve stimulation has been shown to provide medium-term success in 80% of patients treated for fecal incontinence.¹⁴ Although the mechanism remains unknown, sacral neuromodulation causes stimulation of the anal sphincter and produces changes in rectal sensation.¹⁵ In addition, sacral transcutaneous electrical nerve stimulation appears to be superior to a placebo.¹⁶ Spinal mobilization has been shown to cause measureable changes in the sympathetic nervous system in the lower extremities.¹⁷ It seems possible that improved sacroiliac joint function could produce sacral nerve root stimulation with resulting improved urinary and bowel continence.

At the time that this case report was written, the patient's progress had been followed for approximately 12 months. During this time, the patient experienced a recurrence of bladder and bowel incontinence approximately 6 months after the initial course of treatment. This exacerbation prompted the patient to return for a second course of treatment, which provided relief of his incontinence symptoms. Apparently, the changes associated with chiropractic spinal manipulation are not permanent for this condition. However, the desired therapeutic effect remained for several months after the withdrawal of treatment. This appears to be somewhat better than a common pharmacologic treatment using oxybutynin where urinary incontinence recurs almost immediately upon withdrawal.³ Additional study may provide guidance regarding a treatment regimen of

chiropractic spinal manipulation that is effective for pediatric patients with incontinence and what, if any, follow-up treatment is expected. Pelvic floor exercises^{18,19} and/or biofeedback¹⁹ may enhance the treatment regimen. A longer-term follow-up of this patient may provide additional insight.

Limitations

Limitations of this case study include the lack of an objective measure of incontinence such as the Fecal Incontinence Quality of Life Index. Monitoring of progress was based on the patient/parent's recollection of the number of episodes of incontinence since the previous office visit. There may be a discrepancy between patient and parent reporting of the frequency and type of incontinence episodes. It is possible that the patient improved because of other factors not related to treatment such as psychosocial motivation associated with starting school.

Conclusion

For this patient, chiropractic spinal manipulation provided improvement in both bladder and bowel control. Continence was achieved within a few weeks, and the treatment was well tolerated by the patient without unwanted adverse effects. This case study provides support for further study of chiropractic care for the treatment of urinary and bowel incontinence.

Funding sources and potential conflicts of interest

No funding sources or conflicts of interest were reported for this study.

References

1. Kondo A, Kamihira O, Ozawa H. Neural tube defects: prevalence, etiology and prevention. *Int J Urol* 2009;16(1):49-57.
2. Palmer LS, Zebold K, Firlit CF, Kaplan WE. Complications of intravesical oxybutynin chloride therapy in the pediatric myelomeningocele population. *J Urol* 1997;157(2):638-40.
3. Ab E, Dik P, Klijn AJ, van Gool JD, de Jong TP. Detrusor overactivity in spina bifida: how long does it need to be treated? *Neurourol Urodyn* 2004;23(7):685-8.

4. Kari JA, Safdar O, Jamjoom R, Anshasi W. Renal involvement in children with spina bifida. *Saudi J Kidney Dis Transpl* 2009;20(1):102-5.
5. Eire PF, Cives RV, Gago MC. Faecal incontinence in children with spina bifida: the best conservative treatment. *Spinal Cord* 1998;36(11):774-6.
6. de Jong TP, Chrzan R, Klijn AJ, Dik P. Treatment of the neurogenic bladder in spina bifida. *Pediatr Nephrol* 2008;23(6):889-96.
7. Borregard PE. Neurogenic bladder and spina bifida occulta: a case report. *J Manipulative Physiol Ther* 1987;10(3):122-3.
8. Verhoef M, Lurvink M, Barf HA, et al. High prevalence of incontinence among young adults with spina bifida: description, prediction and problem perception. *Spinal Cord* 2005;43(6):331-40.
9. Miner Jr PB. Economic and personal impact of fecal and urinary incontinence. *Gastroenterology* 2004;126(1 Suppl 1):S8-S13.
10. Kinavev C. Adolescents born with spina bifida: experiential worlds and biopsychosocial developmental challenges. *Issues Compr Pediatr Nurs* 2007(4):147-64.
11. Komissarov IA. The classification and choice of the method of treatment in fecal incontinence in children. *Vestn Khir Im I I Grek* 1997;156(2):85-8.
12. Reitz A, Fisang C, Muller SC. Neuromuscular dysfunction of the lower urinary tract dysfunction beyond spinal cord injury and multiple sclerosis. A challenge for urologists. *Urologe A*. 2008 Sep; 47(9): 1097-8, 1100-2, 1104-5.
13. Tiandra, Chank MK, Yeh CH, Murray-Green C. Sacral nerve stimulation is more effective than optimal medical therapy for severe fecal incontinence: a randomized, controlled study. *Dis Colon Rectum* 2008;51(5):494-502.
14. Tiandra, Lim JF, Matzel K. Sacral nerve stimulation: an emerging treatment for faecal incontinence. *ANZ J Surg* 2004;74(12):1098-106.
15. Govaert B, Van Gemert WG, Baeten CG. Neuromodulation for functional bowel disorders. *Best Pract Res Clin Gastroenterol* 2009;23(4):545-53.
16. Hagsstoem S, Mahler B, Madsen B, Djurhuus JC, Rittig S. Transcutaneous electrical nerve stimulation for refractory daytime urinary urge incontinence. *J Urol* 2009.
17. Perry J, Green A. An investigation into the effects of a unilaterally applied lumbar mobilization technique on peripheral sympathetic nervous system activity in the lower limbs. *Man Ther* 2008;13(6):492-9.
18. Vasconcelos M, Lima E, Calafa L, Noronha A, Canquassu R. Voiding dysfunction in children. Pelvic-floor exercises or biofeedback therapy: a randomized study. *Pediatr Nephrol* 2006 Dec;21(12):1858-64.
19. Nicastro A, Stella LP, Nicolai AP. Fecal incontinence: role of anal sphincter rehabilitation. *Chir Ital* 2006;58(4): 493-500.