

Treatment of Low Back Pain by Cranial Adjustment: A case report

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Narrative: Lower back pain (LPB) is a commonly occurring reason for patients to present themselves for chiropractic care. Here I report the case of a 39 year old male policeman with chronic low back and knee pain post work injuries. Standard clinical assessment protocols were performed and treatment delivered using the Van Rumpt cranial technique.

Resolution was rapid and this relative immediate response to care and the prior unremitting nature of the condition (4 weeks), as well as its lack of improvement to rest or physical therapy, suggests a compelling temporal relationship between this care and the resolution of the presenting problem.

I also give a brief historical overview of the development of the Van Rumpt cranial technique.

Indexing terms: Chiropractic; Van Rumpt technique; low back pain; work-related injury, cranial.

Introduction

Lower back pain (LPB) is a commonly occurring reason for patients to present themselves for chiropractic care. The evidence base of information is growing to support chiropractic's care of low back pain. Whereas a 2011 Cochrane review found '*combined Chiropractic interventions slightly improved pain and disability in the short term and pain in the medium term for acute/subacute LBP*' (1) Lawrence et al determined that '*as much or more evidence exists for the use of spinal manipulation to reduce symptoms and improve function in patients with chronic LBP as for use in acute and subacute LBP*'. (2)

While studies have found positive effects of Chiropractic care for patients with acute pain, a study was performed to evaluate short-term changes in care of chronic LPB. Using inflammatory markers interleukin-6 (IL-6) and C-reactive protein (CRP) a total of 9 Chiropractic lower back manipulations caused the mediators of inflammation to present a normalisation response in individuals

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suffering from chronic low back pain. (3)

A comparative cost-effectiveness study of medical and Chiropractic care for the treatment of LBP found that '*Chiropractic care appeared relatively cost-effective for the treatment of chronic LBP. Chiropractic and medical care performed comparably for acute patients. Practice-based clinical outcomes were consistent with systematic reviews of spinal manipulation efficacy: manipulation-based therapy is at least as good as and, in some cases, better than other therapeutics.*' (4) Similarly the Roy et al study (3) found inflammatory changes in chronic low back patients. Haas also found '*There was a positive, clinically important effect of the number of Chiropractic treatments for chronic low back pain on pain intensity and disability at 4 weeks. Relief was substantial for patients receiving care 3 to 4 times per week for 3 weeks.*' (5)

The purpose of this case report is to examine if there could be a possible clinical connection between lower back pain and dysrelationships of the cranium.

Case history

A 39 year old male policeman, 5'9" 175cm, weighing 275 pounds 124.7 kg suffering from an injury 3 - 4 years previously to his lower back presented to this office. The initial injury was due to lifting a suspect on a stretcher subsequent to a fight to subdue and restrain the suspect. He had received physical therapy treatment and his LBP condition had resolved. In July of 2011 the policeman was involved in another work related altercation and injured his knee. Due to this injury, he found himself limping and once again experiencing LBP. He had his knee operated on surgically on March 2012. Following the surgery, his back pain became constant and unresponsive to rest or physical therapy. One month later (April 2012) he presented to this clinic for examination and treatment for his unremitting LBP.

Method and intervention

The patient complained of pain in his knees of 4/10 and pain in his low back on flexion of 5/10. The examination results included the following:

- Posture evaluation revealed: Hip low on the right, right shoulder low, and ear low on the left
- Trendelenburg test was positive on the right
- the left arm fossa test 10 positive in upper fossa
- pressure to L5 spinous was positive to pain on the left.

Following the exam, adjustments were performed using a Van Rumpft double thumb toggle. Sacro occipital technique evaluation procedures and analysis (11) were used in conjunction with methods developed by Van Rumpft. (12)

Using Van Rumpft's cranial patterns (12) the patient was determined to have an anterior cranial distortion pattern. In addition to cranial adjustments to the sphenoid, temporals and mandibular regions, adjustments were made to the frontal, parietals, nasal bones, maxillas, zygomatics and the occiput. All were rechecked after the adjustment to verify that the

subluxations originally present no longer created a reactive leg response (pre- and post-assessment test developed by Van Rump) upon testing.

Various muscles were tested to determine if a positive functional change could be found clinically following care. (13)

Results

Shortly post-treatment the patient stated that he *'felt great and all the pain in his knee and his lower back had resolved'*. Upon getting off the table the patient responded that he felt *'different'*. The next day, he reported a marked reduction of LBP that was sustained and it was the first time in a month that he could walk without a limp and not concurrently experience LBP.

On reevaluation posture presentation revealed a right hip low, shoulders level, and left ear low. Trendelenburg was negative bilaterally, arm fossa test was negative bilaterally, however the left sided pain at L5 spinous process on pressure shifted superiorward to pain on pressure at lumbar 4 spinous process, also on the left.

Muscle	Pre-Treatment	Post-Treatment
Transverse Abdominals	+4 bilaterally	+4 bilaterally
Psoas Major	+4 bilaterally	+5 bilaterally
Adductor Brevis	+4 bilaterally	+5 bilaterally
Gluteus Maximus	+4 bilaterally	+5 bilaterally
Multifidus	+4 bilaterally	+5 bilaterally
Iliocostalus Lumborum	+4 bilaterally	+5 bilaterally
Sternocleidomastoid	+4 bilaterally	+5 bilaterally
Splenius Capitus	+4 bilaterally	+5 bilaterally
Gluteus Medius	+5 bilaterally	+5 bilaterally

Discussion

Most cranial techniques and concepts have their basis and origin in the work of William Garner Sutherland. (14, 15) He examined the bone anatomy, studied their articulations, and manufactured apparatuses to compress and put forces into his own skull in order to affect / impair its natural movement. He also used these apparatuses to correct the dysfunction that he had created in himself as a result of his experimentation. With the results of his experiments he became convinced that cranial bones moved and began developing manual techniques to create movement and undo fixations that might exist in a patient's skull.

Gray's Anatomy states that *'suture closure begins at twenty-two years in the sagittal and sphenofrontal, at twenty four years in the coronal and at twenty-six years in the lambdoidal and occipitomastoid. The process is most rapid from twenty-six to thirty years then slows down and may not be complete until old age'*. (16) A study looking at the fronto-zygomatic suture, however,

demonstrated that individuals even in their 80's and 90's still had non-union. (17) Retzlaff et al (18) and Todd and Lyons (19) also found that sutures do not fuse in later life. More and more there can be less and less debate about whether cranial bones move Frymann, (20) St. Pierre, (21) Michael, (22) Retzlaff, (23) Moskalenko, (24, 25) and Oleski (26) have performed studies to investigate the possibility of cranial bones motion and its clinical application. A letter to the editor by Blum and Cuthbert (27) offers some significant studies suggesting that cranial bone therapeutic interventions does have evidence based support.

The methods and Chiropractic techniques used in this case study were those developed and researched by Richard Van Rump, D.C. (28, 29) Van Rump (1904 - 1987) was a professional boxer in New York at the young age of 16. When Dr. Van Rump and the other boxers would prepare for a fight, the boxing trainer did a rudimentary leg check before performing a cervical manipulation. This experience left him with a curiosity about leg checks, and he subsequently spent many years observing the phenomena involving dynamic changes of relative leg length. (30) Van Rump graduated from National College of Chiropractic in 1922 and by the late 1920s had met Dr Major DeJarnette and became his student. Not much later he was chosen by DeJarnette to head up the SOT east coast research group. By the late 1940s the two men parted ways and Van Rump began to teach his own adjusting technique and system of subluxation analysis.

Van Rump's protocol was fairly direct:

He had discovered a neurological reflex that was elicited when the feet of a patient are moved very specifically around an axis of rotation of the subtalar joint. (31) When one foot is fully everted and the other foot is everted only half way, a whole body reflex is elicited which triggers contraction of muscles all along the half-everted side of the body creating a relative short leg to occur. That shortening can be as little as an $\frac{1}{8}$ of an inch or more than a full inch (3 mm to 2.5 cm). Once the doctor has established this 'leg shortening reflex', he/she can use it as a feedback tool, in conjunction with a body tissue challenge, to identify the presence of nerve interference almost anywhere in the body.

A study by Shelley found a positive response relating to fertility with a 32 year old female where initially '*surface EMG showed significant muscle asymmetry, with a marked elevation of muscle tension on the left side in the area of L3*', (32) whereas a follow-up at 6 weeks found that '*surface EMG showed a substantial improvement in muscle symmetry, as well as a reduction in the muscle tension previously noted at L3*'. (32)

Van Rump utilised a simple Cartesian system of three dimensional analysis to determine if the body's proprioceptive receptors are working properly. The doctor challenges any anatomical structure to the right or the left, anterior or posterior, cephalad (superior) or caudad (inferior). After challenging the structure, the doctor performs the foot eversion procedure to check for leg shortening. If the reflex activated leg demonstrates relative shortening, then there was some mechanoreceptor dysfunction, assuming that the reflex was not inhibited at the spino-cortical level. Purportedly if there was no response to the 'subtalar reflex challenge' that it was due to some inhibition of the local proprioceptor response, and therefore there was no interference with the reflex activated leg mechanism. The doctor would then adjust the 'offending' structure to reset the proprioceptor, removing the subluxation.

Applying this to the cranium, Van Rump researched challenging the external bones of the skull, including the sphenoid, temporals, parietals, frontal, occiput, maxilla, zygomatic, nasal

bones and mandible. He analysed for anterior, posterior, superior, inferior, medial and lateral subluxations. Van Rumpt identified what he called four basic patterns of subluxations:

- an anterior pattern
- a posterior pattern, or
- a mixed pattern.

The anterior pattern consists of an anterior-superior sphenoid, anterior-superior temporal bones accompanied by an anterior-inferior mandible. The posterior pattern consists of posterior-inferior sphenoid and temporal bones, accompanied by a posterior-superior mandible. A mixed pattern consists of one side of the cranium having an anterior pattern and the other side of the cranium having a posterior pattern of the sphenoid and temporal bones.

The fourth pattern consists of a skull which does not follow any of the other three configurations, wherein any of the bones may be atypical.

Van Rumpt wrote very little about his research and cranial techniques (12) and likely incorporated a wide variety of Chiropractic cranial methods of care such as DeJarnette's.(33) Van Rumpt's approach, however, excepting significant concern for proper anatomy, bears little resemblance to other cranial techniques. The analysis is not based on findings of visual observation, palpation or limited ranges of motion of the cranial bones.

Rather, the focus of the adjustment is determined by the assumed bio-electric reaction that the patient's body has when the cranial structure is challenged and found to not be communicating appropriately with the central nervous system. (34)

Pain relief

There are various possible rationales why a cranial adjustment might have facilitated this patient's relief of lower back pain. Theoretically correcting cranial bone imbalance could change the centre of gravity of the skull thereby causing a general shift in posture contributing to the relief of back pain. Correcting cranial subluxations may change the intermembranous tensions of the dura allowing for improved cerebrospinal fluid circulation and a better integrative firing pattern of nerve impulses down the spinal cord returning muscle activity to previously impaired muscles.

In a 2009 study, Unger et al described a change in cranial bone distortions patterns due to modification of the pelvis via pelvic wedges or blocks with a supine patient. (6) Chinappi and Getzoff suggested that based on their study, the position of the jaw, head and vertebral column, including the lumbar region, are intricately linked. (7) Beck and Blum found that a patient who had a relationship between visual dysfunction and LBP had improvement in vision and LBP through the use of cranial manipulation. (8) While Fink also discussed a functional relationship between the craniomandibular system, cervical spine, and the sacroiliac joint, (9) research studying a relationship between cranial adjusting and low back has not been readily found in the literature.

Conclusion

While there have been few studies investigating Van Rumpt techniques in the treatment of back pain, in this one case, it appears that a 'Van Rumpt style' cranial adjustment offers a therapeutic benefit to an adult with chronic lower back pain. With case reports where there are no control groups utilised, there is always the chance of biased reporting. It is also possible that the improved clinical findings are related to a regression to the mean.

However, considering the relative immediate response to care and the prior unremitting nature of the condition (4 weeks), as well as its lack of improvement to rest or physical therapy, suggests a compelling temporal relationship. Further research is needed to determine how long this improvement will last from this one correction and to help determine the best subset of individuals with lower back pain who might be best served by this type of cranial adjustment.

Evidence context

This descriptive study is an observational design and is limited as an n of 1 report, lacking controls. The effect of potential confounding factors, including comorbidities, cannot be excluded. We recognise that sublaxation identification and correction is the art of the individual Chiropractor.

The findings could support the clinically relevant hypothesis that the identification and correction of cranial dysfunction is a modifiable contributor to the effective management of the clinical presentation of low back pain.

This report is eligible for inclusion as 'expertise' bringing clinical insights into the JBI FAME evidential ring (35) to inform evidence-based healthcare in general and the science of Chiropractic in particular.

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References

1. Walker BF, French SD, Grant W, et al. A Cochrane review of combined chiropractic interventions for low-back pain. *Spine (Phila Pa 1976)*. 2011 Feb 1;36(3):230-42.
2. Lawrence DJ, Meeker W, Branson R, et al. Chiropractic management of low back pain and low back-related leg complaints: a literature synthesis. *J Manipulative Physiol Ther*. 2008 Nov-Dec;31(9):659-74.
3. Roy RA, Boucher JP, Comtois AS. Inflammatory response following a short-term course of chiropractic treatment in subjects with and without chronic low back pain. *J Chiropr Med*. 2010 Sep;9(3):107-14.
4. Haas M, Sharma R, Stano M. Cost-effectiveness of medical and chiropractic care for acute and chronic low back pain. *J Manipulative Physiol Ther*. 2005 Oct;28(8):555-63.
5. Haas M, Group E, Kraemer DF. Dose-response for chiropractic care of chronic low back pain. *Spine J*. 2004 Sep-Oct;4(5):574-83.
6. Unger JF, Jr, Provencher S, DeCamp ON. Cranial Distortion and Category II Pelvic Blocking: A Pilot Study. *Journal of Vertebral Subluxation Research*. Dec 18 2009:1-11.
7. Chinappi AS Jr, Getzoff H. Chiropractic/dental cotreatment of lumbosacral pain with temporomandibular joint involvement. *J Manipulative Physiol Ther*. 1996;19(9):607-12.
8. Beck CA, Blum, CL. Vision induced chronic low back pain: A case report. *J Chiropr Ed*. 2012;26(1):85-116.
9. Fink M, Wähling K, Stiesch-Scholz M, et al. The functional relationship between the craniomandibular system, cervical spine, and the sacroiliac joint: a preliminary investigation. *Cranio*. 2003 Jul;21(3):202-8.
10. Hestøek L, Leboeuf-Yde C. Are chiropractic tests for the lumbo-pelvic spine reliable and valid? A systematic critical literature review. *Journal of Manipulative and Physiological Therapeutics*. May 2000;23:258-75.
11. Getzoff H. Sacro Occipital Technique Categories: A System Method of Chiropractic. *Chiropractic Technique*. May 1999; 11(2): 62-5.
12. An interview with Dr. Richard Van Rumpft. *The American Chiropractor*. September 1987: 4-7.
13. Cuthbert SC, Goodheart GJ Jr. On the reliability and validity of manual muscle testing: a literature review. *Chiropr Osteopat*. 2007 Mar 6;15:4.
14. Harold I. Magoun. *Osteopathy in the Cranial Field*, 2e. 1966
15. Sutherland WG. *The Cranial Bowl*. Free Press Company: Mankato, MN. 1939:17.
16. Gray H. *Anatomy of the Human Body*. 29th edition. Lea & Febiger: Philadelphia, PA. 1973:150.
17. Kovich V. Age changes in the human frontozygomatic suture from 20 to 95 years. *American Journal of Orthodontics*, 1976;69:411-30.
18. Retzlaff EW, Upledger J, Mitchell FL, Jr. Age related changes in human cranial sutures. *Anatomical Records*. 1979; 663.
19. Todd TW, Lyon DW. Cranial suture closure its progress and age relationship, Part I-IV. *Am J Phys Anthropol*. 1924-25; 7: 325-84, 8:23-71, 149-68.
20. Frymann VM. A study of the rhythmic motions of the living cranium. *Journal of the American Osteopathic Association*. 1971;70:1-18.
21. St Pierre N, Roopel R, Retzlaff EW, The detection of relative movements of cranial bones. *Journal of the American Osteopathic Association*. 1976; 76:289.
22. Michael DK, Retzlaff EW. A preliminary study of cranial bone movement in the squirrel monkey. *Journal of the American Osteopathic Association*. 1975;74:866-880.
23. Retzlaff EW, Michael DK, Roppel RM. Cranial bone mobility. *J Am Osteopath Assoc*. 1975 May;74(9):869-73.
24. Moskalenko YE, Kravchenko TI, Gaidar BV, Vainshtein GB, Semernia VN, Maiorova NF, Mitrofanov VF. The periodic mobility of the cranial bones in man. *Fiziol Cheloveka*. 1999 Jan-Feb;25(1):62-70.
25. Moskalenko YE, Kravchenko T, Chervotok A, Sharapov K. Bioengineering support of the cranial osteopathy treatment. *Med Biol Eng Comput*. 1995;34:185-186.
26. Oleski, S, Smith G, Crow W Radiographic Evidence of Cranial Bone Mobility *Cranio: The Journal of Craniomandibular Practice*; Jan 2002;20(1):34-8.

27. Blum CL, Cuthbert SC, Cranial Therapeutic Care: Is There any Evidence?, Journal of Chiropractic and Osteopathy, 2006; 14(10).
28. DNFT creator Van Rumpft dies at age 83. ICA Rev. 1987 Nov/Dec;43(6):3
29. Cooperstein R, Gleberzon BJ, Technique systems in chiropractic. Churchill Livingstone: London, England. 2004:151.
30. John C. Directional Non-Force Technique. Today's Chiro 2003 Mar-Apr; 32(2).
31. Khauv KB, John C. Health-related quality of life improvements in adult patients with chronic low back pain under low-force chiropractic care: A practice-based study. Chiropr J Aust. 2011 Dec;41(4):118-22.
32. DeJarnette MB. Cranial Technique. Privately Published: Nebraska City, NB. 1979-80.
33. Shelley J, Healthy Pregnancy In A Previously Infertile Patient Following D.N.F.T. Chiropractic Care: A Case Report. J Vert Sublux Res 2003; 2003(1):1-7.
34. Blum CL. Non-Synaptic Messaging: Piezoelectricity, Bioelectric Fields, Neuromelanin and Dentocranial Implications. Annals of Vertebral Subluxation Research. Jan 2007: 1-6.
35. 7.2.2. Descriptive study designs. JBI Manual for Evidence Synthesis. 2024 edition. At <https://jbi-global-wiki.refined.site/space/MANUAL/355598734/7.2.2.+Descriptive+study+designs>



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