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- The Styloid Effect on Upper Cervical Chiropractic Care - Stan Pierce, Jr. DC

A Case Study Using Knee Chest Upper Cervical Chiropractic Care for a 46-Year-Old Female with Frequent Migraines and Headaches

Jason Gonzales DC

Background

Migraines are a common and disabling primary headache disorder. Epidemiological studies have estimated the global prevalence to be 14.7% with women being affected more than men (3:1).¹ In the Global Burden of Disease Study of 2015, migraines were ranked the third-highest cause of disability in both males and females under the age of 50 years.²

The exact pathogenesis of migraines is still unknown, but the current prevailing theory is that migraines are a complex neurovascular problem with an underlying genetic predisposition. The pain associated with migraines is believed to involve the activation of the trigeminovascular pathway.³

Migraine without an aura (that type of migraine in this case) are defined as recurrent headache disorder manifesting in attacks lasting 4–72 hours. Key characteristics of this type of migraine are unilateral location, pulsating quality, moderate or severe intensity, aggravation by routine physical activity and association with nausea and/or photophobia and phonophobia.⁴

Methods

The Art of The Specific (TATS) diagnostic, x-ray, and adjustment protocols were exclusively used in this case. Paraspinal thermography was used in the initial exam and throughout the course of care to determine the presence and absence of autonomic nervous system dysfunction.^{5,6,7} TATS biomechanical x-ray protocol and analysis were used to determine the structural nature of the vertebral subluxation complex.^{8,9} TATS knee-chest adjustment procedure was used whenever an adjustment was deemed necessary based on the paraspinal thermography scan.

Results

At the time of the patient's initial visit she was getting an average of 6 migraines and several headaches per month. The paraspinal thermography scans and the TATS system of analysis was used to determine the presence of neuropathophysiology. The TATS biomechanical x-rays procedure and analysis were used to locate the specific nature of the vertebral subluxation and in this case the subluxation was located in the upper cervical spine. During the patients first month of care she had 8 visits to the clinic, received an adjustment on 6 of those visits, and by the end of the month reported 0 migraines and several headaches. During the patient's 2nd through 4th month of care she had 16 visits to the clinic, received 9 adjustments, and during that time reported 3 migraines and several headaches. During her final two months of care, month 5 and 6, she had 5 visits to the clinic, received 0 adjustment, and during those two months reported 0 migraines and 0 headaches.

Conclusion

The thermography scan analysis, biomechanical x-ray procedure and analysis, and knee-chest adjustment procedure as taught in The Art of The Specific appeared to be helpful for this case. Further clinical study of the TATS system and its ability to help relieve migraines and headaches is warranted.

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Introduction

Pulse oximetry (PO) is regularly used in neonatal evaluation to assess for congenital heart disease (CHD). In the United States congenital malformations are one of the top causes of death in infants, CHD is one of the most common birth defects with an incidence of nine out of every 1,000 live births. Among those malformations, Critical Congenital Heart Disease (CCHD) is to blame for more deaths than any other type of malformation (Hoffman, & Kaplan, 2002; Heron, & Smith, 2003). CCHD is composed of a group of morphological heterogeneous disorders that require surgical or catheter intervention therapy to achieve survival (Riede et al., 2010). The role of chiropractic care in the improvement PO has not been evaluated, but different mechanisms in the upper cervical spine causing alterations in the autonomic nerve system could potentially affect oxygen concentrations in blood. Cervical spinal cord injury can alter autonomic function and create disordered hemodynamics as a result of altered sympathetic outflow (Hou, & Rabchevsky, 2014). Furthermore, cervical spine atrophy has been demonstrated to have a high correlation to autonomic dysfunction in patients with multiple sclerosis (de Seze et al. 2014). This case study delineates the care of a neonate with low PO levels, and the results obtained with subluxation-based chiropractic care.

Intervention and Outcomes

Immediately after birth a certified midwife placed a pulse oximeter on the neonate's foot, where she noticed it had a low oxygenation rate of 73 mm Hg (normal is 95 to 100 mm Hg). Per state protocol, she informed the parents of the probability of having to transport the newborn to the emergency room due to possible CHD. The pediatric chiropractor arrived and assessed the neonate for upper cervical subluxation and found a left atlas subluxation. With a gentle sustained contact type of force with the middle finger of his right hand, the chiropractor delivered a chiropractic adjustment to the left atlas transverse process. In real time the pulse oximetry reading went from 73 mm Hg to 95 mm Hg. Subsequent indicators of subluxation disappeared.

Conclusion

This case study provides supporting evidence of the benefits of subluxation-based chiropractic care in the improvement of pulse oximetry readings in neonates. It is recommended that a pediatric chiropractor be available to assess newborns for the presence of vertebral subluxation within the first 24 hours after birth in order to prevent more invasive medical interventions, like this case demonstrates. More research is warranted at the moment into pediatric chiropractic and its benefits in pulse oximetry and overall health.

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Very few events in chiropractic history have had such an incredible impact on chiropractic's identity as the Morikubo trial. The trial was a landmark case because for the first-time chiropractic was viewed as a distinct profession apart from osteopathy. Fifty-three documents in the literature including dissertations, peer-reviewed articles, and academic textbooks have published incorrect facts about the trial. Some of these mistakes are used to support arguments for or against philosophy and vertebral subluxation in the literature. A review of several databases led to the location of 190 primary source documents about the trial and the context of the trial. Content analysis was utilized to analyze the data and sort the relevant facts into seven themes. An attempt was made to verify each fact with two or three sources so that an accurate picture of what happened at the trial, the lead up to the trial, and the events soon after could be ascertained. Secondary and tertiary literature were then analyzed based on the verifiable facts. Overall, an assessment of all arguments relying on the events of the Morikubo trial as evidence need to be reassessed. Ultimately, all arguments in peer-review relying on those sources will also need to be evaluated for accuracy, clarity, and impact.

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Introduction

The objective of this paper is to show how stability was improved in this 9- year-old male patient after chiropractic adjustments. Balance disorders can result from central nervous system dysfunction. Information necessary for postural control is derived from an integration of sensory inputs from the visual, somatosensory and vestibular systems. (1,2) The chiropractic adjustment of subluxation primarily impacts the somatosensory system i.e. joint mechanoreceptors and muscle spindles, thereby influencing suprasegmental structures. (3)

KFS is a developmental disorder presenting with a variety of congenital malformations resulting in spinal biomechanical dysfunction. (4) KFS patients have a higher risk of injury and neurological insult after minor trauma to the cervical spine. (5) The importance of stability improvement is fall prevention in KFS patients.

The chief complaint was problems of co-ordination in daily activities and the negative effect on social skills. The developmental milestone of standing on lone leg had not yet been met.

Methods

The single leg standing test (SLST) with eyes open and eyes closed were timed. Repetitions were counted on the single leg hopping test (SLHT). These were utilized for outcome assessment. Radiographic findings were consistent with type III KFS in the cervical, thoracic and lumbar spines. Chiropractic adjustments were performed using the Activator methods technique on 34 visits over a 6 months period.

Results

SLST testing improved by 25 seconds on the right leg with eyes open, by 17 seconds with eyes closed, on the left leg with eyes open 29 seconds, with eyes closed 16 seconds. The SLHT improved on the right 14 and on the left 12 hops. Significant improvement in co-ordination of daily activities and meaningful improvement in socialization were reported by the parents.

Conclusion

The results suggest the sensorimotor integration effect of subluxation correction improved stability testing outcomes. Focused research on KFS patients and stability could be used to better inform the KFS population of the value of chiropractic to them.

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Pulse Pressure Findings Following Upper Cervical Care: A Practice-Based Observational Study

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Introduction

Pulse pressure is an indicator of cardiovascular health and is the difference between systolic and diastolic blood pressures. An important etiologic consideration is autonomic nervous system balance. The purpose of this study is to observe pulse pressure changes following a six-week course of care utilizing an upper cervical technique.

Methods

One hundred and thirty patients presenting in five different clinics were separated into three groups based on initial pulse pressure groups with 40 mmHg considered as normal: low (< 40 mmHg), medium (40- 49 mmHg), and high (> 49 mmHg).

Results

Pulse pressure reduced by 8.9 mmHg in the high group which was statistically significant ($p < 0.01$) with a large effects size of 0.8. Changes in the low and medium groups were not statistically significant ($p < 0.05$).

Conclusion

In this observational study the group displaying the highest pulse pressure demonstrated statistically significant reduction in pulse pressure.

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Background

Public health focuses on the health of a community through assessment, policy development, and assurance.¹ Epidemiological data on prevalence, incidence, and mortality is used to describe and define health burden in the public health model. Prevention is addressed at primary, secondary, and tertiary levels; primary preventative efforts are focused in reducing the incidence of disease through health promotion and surveillance strategies. In the United States, greater emphasis has been placed on public health and prevention in recent times due to the current burden of rising healthcare costs within the conventional model. Goals of public health are to save money, improve quality of life, help children thrive, and reduce human suffering. Simultaneously, a salutogenic approach to health has been popularized in the scientific literature, stressing wellness and health promotion.²

For decades, chiropractors have attempted to establish the significance of vertebral subluxation in health outcomes. Research supports the role of chiropractic in improvement of quality of life.^{3,4} Furthermore, chiropractic principles espouse concepts of wellness and optimal function. Through the assessment of biomechanical and neurological indicators of vertebral subluxation, chiropractors maintain that reduction or correction leads to improved life expression, beyond symptoms or pathology. Screening for subluxation indicators in chiropractic care may be presented as a mode of primary prevention if the data can establish its significance.

The opportunity to collaborate with public health is available. The American Public Health Association notes key goals related to chiropractic health care:¹

- To promote collaboration between chiropractic and other health care professions
- To disseminate public health research
- To promote conservative care in community health
- To support chiropractic care inclusion in public health
- To encourage participation of the chiropractic profession in public health, APHA and the CHC Section
- To collaborate with the APHA community in advancing public health policy

Scientific study of the vertebral subluxation through a public health lens is desperately needed.⁵ This information will allow researchers, educators, clinicians, and policy makers to better develop communication strategies surrounding the significance of chiropractic care and the consideration of the presence of subluxation as an imminent public health threat.

Conclusion

A public health perspective and analysis can support the evidence-base for chiropractic care. Principles of epidemiology applied to the prevalence and significance of subluxation indicators may suggest that vertebral subluxation represents a potential public health burden.

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KEYNOTE: A Neuro-Radiographic Demonstration of The Upper Cervical Misalignment in Patients Involved in Head/Neck Trauma

Scott L. Rosa DC, B CAO

We will be discussing the following:

1. A review of the static stabilizers of the CCJ (cranio-cervical junction) and their appearance on MRI, including the proper sequences necessary to view them.
2. The neuro-anatomical, neuro-biomechanical as well as neuro-vascular connection when trauma occurs at the CCJ (cranio-cervical junction).
3. “Brain health” an imaging perspective via brain MRI, CSF flow aberrances, arteriole/ venous flow dysfunction resultant from misalignments of the CCJ.
4. Cine MRI studies, a review of real time cine MRI’s of the cervical spine revealing central nerve system stress via cord tension/distortion.
5. An overview of the “Glymphatic System” with cine CSF flow studies demonstrating aberrant CSF flow patterns that can be injurious to the brain/brainstem and spinal cord.
6. An imaging overview of cerebellar tonsillar ectopia and its clinical manifestations.

Abstract

Vertebral subluxations are changes in the position or motion of a vertebra, which result in interference with nerve function. Such changes may result in altered somatic and autonomic nervous system activity. Mechanical and degenerative changes associated with vertebral subluxation may result in a variety of neurological consequences. This presentation discusses causes and staging of spinal degenerative disease, and a review of putative neurological consequences. These include cord compression and adverse cord tension, nerve root compression, local irritation, including irritation of mechanoreceptive and nociceptive fibers within the intervertebral motion segments, vertebral artery compromise, autonomic dysfunction, coherence and oscillatory patterns, dysafferentation, and neuroplastic changes. Histopathological changes in nerve roots, and the staging of spinal degenerative disease using imaging studies are illustrated. Osteoarthritic changes to the cervical and lumbar facet joints are prevalent among patients, and in some cases are asymptomatic. However, they may result in altered neurological function.

Evidence of the Intelligence of Life

William Decken DC, Edgardo Rivera MD, Terry E “Bird” Lancaster MA (presenting)

Sherman College has long contended that duplication of services in health care is not necessary and thus has defined the objective of Chiropractic care as being the detection and correction of vertebral subluxation. This objective does not exist outside of Chiropractic thus enhancing its position as separate and distinct. Towards this end, the route to becoming a Chiropractor includes studying human anatomy, physiology and pathological processes. We propose that what has been interpreted as either anomaly or pathological process is actually evidence of adaptation and therefore crucial to life. This distinction is important to developing and understanding the above-down-inside-out (ADIO) worldview of a chiropractor.

The Chiropractic profession is founded on Thirty-Three principles. A fundamental principle of Chiropractic is a statement of the quality or actions of intelligence in matter, which include any and all circumstances that may arise in study. Principle #18 is named Evidence of Life, stating “the signs of life are evidence of the intelligence of life.” Chiropractic defines life as the condition that distinguishes animals and plants from inorganic matter, including the capacity for growth, reproduction, functional activity, and continual change preceding death. The Chiropractic signs of life are considered to be assimilation, excretion, adaptability, growth and reproduction. Adaptation, as defined by Chiropractic, is a physical process leading to change prior to death that takes place as an expression of intellectual adaptation.

Traditionally, medicine follows the biological worldview. Biologically, life is defined as vitality, the essential condition of being alive; the state of existence characterized by such functions as metabolism, growth, reproduction, adaptation, and response to stimuli. Biology defines the signs of life as metabolism, growth, differentiation, reproduction, movement, and responsiveness. Biology defines adaptation as the process of change, or the change itself, by which an organism or species becomes better suited to its environment for survival and reproduction. Adaptations can be behavioral, physiological or structural.

Are the above definitions more similar than they are different? What of the variations seen in patterns of human anatomy? Are they harmless anomalies, life-threatening pathologies, or actually evidence of the intelligence of life as adaptation? This paper will look at anatomical anomalies from the Sherman cadaver lab as evidence of this intellectual and physical process of adaptation. By reviewing anomalies in vessels, nerves, muscles and other structures, the authors will demonstrate the typical expression of intelligence through accepted anatomical patterns compared to examples of adaptive anatomy.

Subluxation-Centered Chiropractic Care in the Improvement of Lung Function and Quality of Life for Asthmatic Patients

Christie Kwon MS, DC (presenting), Taylor Mathis DC, Marni Capes DC, CCSP, CCEP

Introduction

Asthma is a chronic condition that plagues over 6,000 children, and over 18,000 adults in the US. This condition often results in patients modifying their usual daily activities, numerous missed school days for children, several missed work days for adults, and extra health care costs.^{1,2} Previous studies have shown that chiropractic care can have a positive effect on patients who suffer from asthma.³⁻⁵ Standard chest and lung physical exam and spirometry measurements are commonly used to assess respiratory function, and the Mini Asthma Quality of Life Questionnaire (Mini-AQLQ) is a validated survey tool to evaluate quality of life for these patients. The questionnaire assesses domains of activity limitation, emotional function, and environmental stimuli.

The vertebral subluxation is a state of biomechanical and neurological dysfunction that can interfere with the optimal function of the body. Chiropractors hypothesize that reduction or correction of vertebral subluxation leads to overall improved function, and this outcome may include visceral function and even in the absence of symptoms. This research study aimed to further explore the correlation between subluxation correction through chiropractic adjustment and improvement of lung function and quality of life in asthmatic and non-asthmatic individuals.

Methods

Six subjects were recruited for this study, including three individuals diagnosed with asthma and managing symptoms with medication, one asthmatic without medication use, and two asymptomatic, non-asthmatic subjects. All subjects had not received chiropractic care in the previous three months. For 6 weeks, participants received chiropractic analysis and adjustment per Thompson Drop Technique protocol, twice per week. Baselines measurements for spirometry, patient-reported symptom history, physical exam findings, and Mini-AQLQ scores were recorded at the initial exam. Reassessments were performed weekly, at the second visit of each week, for the duration of the study. All chiropractic analysis and adjustment was performed by a licensed Doctor of Chiropractic.

Results

The majority of asthmatic subjects were found to have a decrease in the severity of symptoms. Forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV1), as well as peak expiratory flow (PEF), were measured through digital spirometry. FEV1/FVC and PEF values improved across the study. PEF values showed that participants were responding well to care overall, mostly in the medicated group. All asthmatic patients showed improved in Mini-AQLQ scores.

Non-asthmatic controls demonstrated high lung function at baseline and follow-up, with no statistically significant overall change. However, one of these participants demonstrated the greatest increase in quality of life per Mini AQLQ scores, suggesting a potential benefit of chiropractic care in the absence of symptoms.

No abnormal breath sounds were detected throughout the course of the study for all subjects.

Conclusion

This study supports previous studies which demonstrated evidence that chiropractic adjustments to reduce or correct vertebral subluxation may improve lung function and the quality of life in asthmatic patients. Larger, longitudinal studies are warranted to further examine a correlation between improved lung function and quality of life for asthmatic patients.

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Intra and Inter Examiner Reliability of Utilizing Biomechanical Spinographic Analysis for the Location of the Misalignment Component of Vertebral Subluxation

Grant Dennis DC

Background

Our current understanding, and appreciation of the biomechanical dysafferentation theory is largely influenced by the presence or absence of a malpositioned vertebrae, in relation to the vertebrae above, and beneath it. Most, if not all, of the current accepted models of analysis of the upper cervical region to locate the misalignment component of the vertebral subluxation are achieved via a static imaging analysis. Whether utilizing radiography, or CBCT, the lens with which the misalignment is used to locate is from that of a static model, instead of a dynamic, or motion model. This study aims to demonstrate the effectiveness, and validity of utilizing a dynamic, motion model of radiographic analysis with a significant level of intra, and interexaminer reliability to locate the misalignment component of vertebral subluxation.

Methods

Once thermographic analysis had been administered, and the presence of subluxation was determined; the Art of the Specific Spinographic Dynamic Motion Radiographic Analysis was taken using the set of standards set forth by the taught curriculum among 20 patients that presented in a clinical setting to locate biomechanical dysfunction within the Upper Cervical Spine, as assumed based on information obtained from White, and Panjabi [1]. The radiographs were then presented blindly without any other clinical bias, or influence to 20 doctors trained in this particular radiographic analysis for the interpretation, and the development of a biomechanical dysfunction that was then conveyed as a “listing.” The intra, and interexaminer reliability of the listing developed among each practitioner was then examined for comparison.

Results

After presenting the same set of radiographs blindly to 20 different practitioners all trained under The Art of the Specific Radiographic Analysis, it was found that 15 of the 20 practitioners all came up with the same biomechanical dysfunction, or misalignment, which they deemed was the “listing” with which they would initiate care based on. The listing was then taken, and compared to that determined by the examiner to be the “expected” listing which was shown to be effective in removing vertebral subluxation from the presenting patient via computerized infrared thermography. A 90% interexaminer reliability was observed among practitioners utilizing this type of dynamic, motion analysis.

Conclusion

The dynamic, motion radiographic analysis utilized among The Art of the Specific practitioners may have a high intra, and interexaminer reliability that can be reproducible among practitioners to establish the misalignment, and biomechanical dysfunction component of the biomechanical dysafferentation as it relates to the vertebral subluxation. It also may be a good model to be approached from when utilizing more advanced imaging modalities such as CBCT, which has become increasingly popular among upper cervical practitioners.

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A Mathematical Model for the Quantification of Cervical Spine Sagittal Curvature

Robert Rectenwald DC, B CAO (presenting), Roy Sweat DC, B CAO, Matthew Sweat DC, B CAO, Dennis Fiorini DC, B CAO

Introduction

The purpose of this project is to provide a tool to explain a complicated engineering concept. It is not to replace methods such as the Cobb angles or Ferguson angles. [1] It will demonstrate an evaluation of degree of curvature of the static sagittal cervical spine (CS). The CS is considered a uniform, deformable cantilever beam subjected to pure bending. This model will be used to quantify the degree of offset from an assumed optimal configuration of the sagittal CS. [2] This measured value could be considered as a component of the cervical subluxation complex.

Method

A bending moment model was developed to assign a numerical percentage to the degree of offset from the assumed ideal CS lordosis. This model was used to calculate a theoretical non-dimensional percentage offset parameter (α) from sagittal radiographs. This abnormal offset (α) is hypothesized to provide insight on inappropriate physical stresses on the cervical spine and provide a measurable element to the subluxation diagnosis. A baseline state is set at the correct curvature κ_0 , when there is a baseline applied moment, M_0 . We use the relative deviation of the actual applied moment from this base, or natural moment, as a measure of the "physical stress" induced by some abnormal curvature of the sagittal cervical spine. We define a measure of this induced "physical stress" or abnormal offset (α)

$$\alpha = \frac{[M_0 - M_1]}{[M_0]}$$

Results

Utilizing the information gained from the model, a normalized offset parameter value of $\alpha = 0\%$ represents the theoretical ideal standard lordotic curvature of the sagittal CS, with 12.5% deviation expected for normal static posture. Values in excess of 12.5% indicate abnormal curvature. When $\alpha = 55\%$, the patient clinically presents with a significant loss of cervical curvature and values of α on the order of 152% would indicate global kyphosis.

Conclusion

This model quantifies global deviation from the ideal CS lordosis. This value may be considered as a component of the cervical subluxation complex. The authors hypothesize this model may be used to standardize evaluation and in some cases validation of subluxation correction effectiveness. It may provide an offset parameter goal for outcome of care.

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The Importance of Worldview

Bill Decken DC, FCSC, DPhCS

Chiropractors make great efforts to educate the people in their practices and communities and in doing so are Chiropractic educators who need to be explicit about worldviews. Some within the Chiropractic profession have adopted the Above-Down-Inside-Out (ADIO) worldview while others identify more with an Outside-In-Below-Up (OIBU) worldview. The American culture has become more mechanistic/materialistic and has not been taught nor can apply vitalistic concepts. This is reflected in the scientific community and has led to the polarity of worldviews seen in Chiropractic.

Sherman College, in adhering to the foundational tenets of Chiropractic, teaches the ADIO worldview as the proper place to view Chiropractic. German philosopher, Wilhelm von Humboldt, commented that language gives rise to worldview. Certainly use of terms such as universal and innate intelligence, or force and mental impulse would be evidence of this in Chiropractic. Worldviews are a response to the problem of the existence and meaning of the world. Indeed, at Sherman College students are encouraged to examine whether they view the world as being organized or chaotic, whether there is a metaphysical aspect to life or not.

Through the years, philosophers such as Kant, Heidegger, Hegel, Kierkegaard, Dilthey, Nietzsche and others have all contributed to the discussion of worldview. More specifically to Chiropractic is what the Palmer's had to say about worldview and why. This paper will attempt to find common threads between the Chiropractic tenet of ADIO and the field of philosophy and reveal the philosophic root of a worldview.

It is important to understand the fundamental thoughts and choices of the founders of Chiropractic as the profession endeavors to build a sustainable future based on the detection and correction of vertebral subluxation in the face of conflicting language and worldviews.

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The Role of Chiropractic in the Management of Patients with Autism: An Integrative Review of the Literature

Matthew McCoy DC, MPH

Background

Chiropractors have been managing children with autism and related neurodevelopmental challenges for decades. There are post graduate programs that focus on the care of this special patient population and research has been conducted. Despite this, chiropractors have recently come under scrutiny for claims related to the health outcomes experienced by this population.¹⁻³ While there is a research base related to this subject, no complete review has been conducted.

Methods

An integrative review of literature was conducted that included a search of PUBMED and the Index to Chiropractic Literature (ICL). These searches were supplemented by a review of the reference sections of each study for additional and relevant studies, papers, reports and abstracts. This process continued until the available reference sources were fully exploited.

Results

A total of 39 studies were found going back to 1988.⁴⁻⁴² These include 26 case studies, 4 case series, three reviews, two systematic reviews, two commentaries, one randomized clinical trial and one cohort study. The total number of subjects in all studies reviewed was 66. The subjects ranged in age from three to 20 years of age. The subjects included 17 females and 43 males. The number of visits reported on in the studies ranged from one to 56 visits.

Discussion

Neurodevelopmental challenges in children have been on the increase. In 2000, it was estimated that one child in 150 was diagnosed with Autism increasing to one child in 88 in 2008. The rates of diagnosis for Attention Deficit Hyperactivity Disorder (ADHD) have increased, on average, 3% each year from 1997 to 2006, increasing to an average of 5.5% from 2003 to 2007 and effects an estimated 8-12% of children worldwide. The most common learning disability is dyslexia with a prevalence ranging from 5-10 per cent. Clearly, something is going on with our children and how their nervous systems are experiencing and perceiving the world around them and its effecting how they respond to it.⁴¹

Neurodevelopmental challenges are associated primarily with the functioning of the neurological system and brain. These challenges include but are not limited to Attention Deficit Disorder (ADD), Attention Deficit Hyperactivity Disorder (ADHD), learning disorders, sensory processing disorders, developmental delays, Cerebral Palsy (CP), mental retardation, epilepsy & seizure, Autism Spectrum Disorders (ASD) and Bipolar Disorder (BD).⁴¹

Possible causes for these neurodevelopmental challenges according to the current scientific research involve environmental, biological and/or genetic factors. This is consistent with traditional chiropractic philosophy that tells us the inability to adapt to these physical, chemical and emotional stresses fundamentally cause all human ailments.⁴¹

With the rising incidence of various neurodevelopmental challenges the likelihood of healthcare professionals encountering them as a presenting complaint in their clinics has also risen and this includes chiropractors. The scientific evidence shows that chiropractic is an appropriate healthcare service for helping people adapt to these challenges. While some chiropractors might include nutrition, dietary and other advice the focus of chiropractic is on locating and correcting or reducing vertebral subluxations through chiropractic adjustment of the spine. The research shows that this helps improve spinal and neurological function resulting in reduction of pain, increased quality of life, increased levels of independence and relief from many of the issues such as language, speech, motor skills, behavior, memory, and learning that accompany neurodevelopmental challenges.^{7,11,23,41,42}

One mechanism of how chiropractic adjustments account for positive health outcomes in people with neurodevelopmental challenges may be through the “neuroplasticity” of the nervous system. When a vertebral subluxation is obstructing the nervous system it is sending abnormal information to the brain. This model of subluxation was first proposed by Kent who called it *dysafferentation*. Think about the old computer analogy “garbage in garbage out”. This abnormal “sensory” information can actually alter the physical anatomy of the brain and those changes may result in a host of problems such as those seen in such challenges as autism, ADHD and so on.⁴³

These changes in brain function have been measured in children with neurodevelopmental challenges such as autism and ADHD including changes in how the visual and hearing centers of the brain are effected in these children.⁴⁴⁻⁴⁶ While more research is needed, chiropractic may actually be helping the brain and nervous system of these children build new connections or re-establish old ones through this process of neuroplasticity.

Not only do we know that subluxations alter the signals traveling to the brain and have an effect on the output⁴⁷ we also know that there are other ways that the brain gets starved. For example, there are fluids that travel into and around the brain. One of them is blood. Research is showing that the area of the upper part of the neck is particularly prone to obstruction, not just of the nervous system but of blood flow into the brain. And there is corroborating research showing that chiropractic care can help improve the blood

flow to the brain by removing these obstructions through chiropractic adjustments.⁴⁸⁻⁵⁰

Another fluid that can be obstructed from entering or leaving the brain from subluxation is *cerebrospinal fluid* or CSF for short. CSF bathes the brain and spinal cord and it has been shown for example that some children with autism experience this obstruction. So promising are these areas of research that they are being used to detect the earliest signs of autism in infants and young children before they even begin to experience the daily challenges that come later.⁵¹ For chiropractors this is exciting because we have a non-invasive, non-drug approach to dealing with these frayed connections and obstructions.

In the largest of the studies on autism by Aguilar and his colleagues, they studied 26 children with autism including 21 males and 5 females for over a year. The researchers in this study were very thorough and assessed these children first to determine if they had vertebral subluxations by taking x-rays of their spine and measuring the function of their nervous system.⁷

They also kept track of any changes in the health status of these children using parent and teacher reports and also through the use of health surveys specific to autism. What they found is consistent with what has been found in much of the research on chiropractic and autism as well as neurodevelopmental issues in general.

The most striking finding in the Aguilar study was that half of the children were able to stop taking drugs for their autism related symptoms because of the improvements under chiropractic care. In addition to that the children experienced a number of positive health improvements including improved digestion, sleep and communication. There were reports of improved school performance, hypersensitivities, and focus.

Interestingly, many of the children recovered from chronic ear infections and bedwetting which are two health challenges that seem to effect kids with autism.

In a small subset of children in the study the researchers also measured brain function using what is called Brainstem Evoked Potentials and found improvements there as well.

In another review of the literature by Alcantara on chiropractic and autism the researchers discussed how the core symptoms of autism are impaired social interactions, deficits in communication and repetitive or restricted behavioral patterns and that at the core of these symptoms are *abnormal sensory processing*.²³ If a child's nervous system is being obstructed because of vertebral subluxations then this will send abnormal information to the brain and will result in some of these core behaviors or symptoms (Garbage in – Garbage out). Research indicates that the chiropractic adjustment helps integrate these sensory abnormalities and as we discussed makes neuroplastic changes that result in a reduction of these symptoms.^{42,47}

In the only randomized clinical trial of chiropractic and autism, Khorshid and Sweat found improvement in autistic symptoms in 14 children. One of the measures they used was the Autism Treatment Evaluation Checklist (ATEC). The ATEC is a one-page questionnaire designed to be completed by parents, teachers, or caretakers. It looks at changes in Speech, Language, Communication, Sociability Sensory/Cognitive Awareness and Physical Behavior. What these researchers also found was a slightly better response in the children who received chiropractic care that focused on structural shifts in the upper part of their necks. Given what we know about the importance of this area of the spine in terms of nerves, blood flow and cerebrospinal fluid flow this makes a lot of sense.¹¹

In another review of the literature on autism and chiropractic, Shreeve reviewed 11 studies in detail and noted that the common thread in the each of the cases he reviewed show the benefits from dealing with the obstruction of the neurological component at the *craniocervical* junction. If that is true, Shreeve concludes, it would benefit those dealing with a diagnosis on the autism spectrum, the health care system, and society at large to focus research and resulting treatments on how to best address those obstructions.⁴²

In what has become a groundbreaking paper, Biedermann, a German researcher, reports on his study of over 600 children less than two years old. In his paper, Biedermann referred to these structural shifts and subluxations as "*suboccipital strain*".⁵²

Lots of things go through this area on their way to the brain such as the spinal cord, nerves, blood vessels and cerebrospinal fluid. Research has shown that this area can literally be a *chokepoint*.⁵³ What Biedermann found matches what many other researchers have found: the infants and children effected by these subluxations in the neck experienced birth trauma, prolonged labor and the use of things like forceps during their births.

These facts highlight the importance and urgency of having newborns checked for subluxations immediately after birth. The number one thing that brought these infants into Biedermann's clinic was asymmetric posture.

This includes things like a tilted head, the head held backwards and awkward sleeping positions that were noticed by the parents. Other signs that something is wrong include: movements on one side of the body that don't match the other side, sleeping disorders, extreme sensitivity, swelling of one side of the face, abnormalities of the hips and spine, unexplained fevers and loss of appetite.

During their examinations of these infants, Biedermann found that their necks were stiff and had reduced range of motion, one side of the head sometimes larger than the other and abnormal reflexes. Some had muscle spasms of the back so severe that the infants' backs

were arched.

Biedermann also took x-rays on these infants and could actually see these structural shifts on the x-rays which he used to help determine how to adjust or fix the misalignments.

Other researchers have found similar results. Siefert studied over 1000 infants and found that 11% of them suffered from subluxations in the upper neck and they also had scoliotic (curved) postures.⁵⁴ What makes Siefert's study so important is that none of those infants had any symptoms whatsoever. Siefert's findings highlight the importance of the need for all newborns to be checked by a chiropractor as soon as possible following birth. Biedermann states:

"The birth canal is one of the most dangerous obstacles we ever have to traverse."

According to Biedermann these delicate structures in the neck undergo considerable stress during the delivery of the baby due to evolutionary changes in the pelvis to help humans walk upright. Making matters worse is the increase in the size of the human skull to make room for a larger brain.

Children suffering from this type of birth trauma may not show any symptoms or only minor ones in the first few months of life. Later on at the age of 5 or 6 they start experiencing headaches, postural problems, sleep disorders and problems concentrating.

None of this information is new. Researchers have known about it for decades. In the 1950's and 60's another German researcher named Gutmann published his findings on subluxations of the upper neck in infants.⁵⁵ Gutmann called this upper neck subluxation: *Blocked Atlantal Nerve Syndrome*. Gutmann found that these infants suffered from lowered resistance to infections, especially to ear-nose- and throat infections, insomnia, cranial bone asymmetry, torticollis, walking problems, language delays, conjunctivitis, tonsillitis, rhinitis, earaches, extreme neck sensitivity, scoliosis, delayed hip development, and seizures.

Another researcher (Frymann) in the 1960's studied over 1200 newborn infants and found that 17% of them had obstructions of the nervous system from structural shifts (subluxation).⁵⁶ Frymann described how these obstructions effected what's called the *craniosacral mechanism* which is how the cerebrospinal fluid flows from the spinal cord through the brain and back again.

Research as recent as 2015 by Waddington tells us that these spinal subluxations (her team referred to them as *somatic dysfunctions*) are extremely common in newborns. Waddington examined "healthy" newborns from 6 to 72 hours old and found that 99% of them had them and that their severity was related to the length of labor.⁵⁷

As we have shown the research is very clear that the birth process itself can lead to vertebral subluxations obstruct the nervous system and result in a host of health problems many times considered "normal" by the average pediatrician. Research also shows that these young infants and children can improve if their subluxations are found early and corrected but can anything be done before birth to prevent this from happening?

That piece of the research puzzle isn't as clear although it makes perfect sense that a pregnant woman who herself has structural spinal shifts (especially in her pelvis and lower back) may be at risk for a more difficult birth. We already discussed how the shape of the pelvis of the mother and the size of the head of the newborn aren't necessarily compatible even without misalignments creating an even greater challenge. Research has shown that women undergoing chiropractic care to correct subluxations in their pelvis and lower back seem to have easier births, less breech presentations and certainly less low back pain.⁵⁸ Whether or not this results in less problems for the infant during the birth process remains to be studied. Whether these children develop more normally than others also remains to be studied.

For now an evidence informed approach is recommend for these decisions.⁵⁹ Given the evidence that does exist, coupled with what we know about the devastating consequences to these children, it is a good idea for pregnant women to have their spines checked for subluxations and if present corrected. Following that the newborn should be checked as soon after birth as possible.

Conclusions

Structural spinal shifts can cause obstructions of the nervous system resulting in vertebral subluxation. Because the nervous system controls and coordinates all functions in the body, obstructing it can have an effect on every function of the body. These effects include those related to neurodevelopmental challenges such as autism.

In terms of promising areas of research for chiropractic and its effects on autism there are plenty of things to focus on. Some of these areas include looking at how chiropractic effects brain function, how it effects blood flow to the brain and what effect subluxations and their reduction have on cerebrospinal fluid flow into the brain. All of this is possible due to the ability to see these changes in the brain using advanced imaging techniques. This is in addition to large scale studies to look at improved health outcomes in large populations of children with autism.

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A Case Series of Children with Oppositional Defiant Disorder/Childhood Anger and Knee Chest Upper Cervical Specific Chiropractic

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Background

Oppositional Defiant Disorder (ODD) is a behavior disorder like extreme childhood anger and is categorized as children who are uncooperative, defiant, and hostile towards parents, peers, teachers, and other authority figures (1). It is estimated that anywhere from 3-5 percent of children may be affected with ODD (2). Often times children with ODD will also have things like mood or anxiety disorders as well as attention deficit/hyperactivity disorder which can be linked to nervous system dysfunction (3). Cases from 6 boys and girls ranging from 4 to 15 years old were used in this case series.

Methods

The Art of The Specific analysis for vertebral subluxation was used in this case. We used x-ray and computerized infrared thermography to determine what needs to be adjusted and when the adjustment needed to take place. We used computerized infrared thermography as that has been shown to be a reliable measure of the autonomic nervous system (4).

Results

After going through the 6 cases health histories, taking x-rays, and performing multiple thermal scans of the nervous system it was showing us that there was a misalignment of the upper cervical area on each child accompanied by neurophysiological dysfunction specific to that child. Changes were seen regarding the intensity of the children's ODD outbursts within 8-12 visits with some changes being noticed within 3 visits. Other changes were also experienced like a decrease in anxiety and ADHD. Computerized infrared thermography signified that the nervous system of the children was functioning normal on certain so we did not give an adjustment.

Conclusion

The Art of The Specific's analysis of x-ray and thermography may provide relief for children suffering with oppositional defiant disorder/childhood anger. The Art of The Specific knee chest upper cervical adjustment has been shown to bring the nervous system back to normal functioning helping these kids' behavior.

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Resolution of Anxiety, Depression and Abnormal Heart Palpitations in a Patient Under Subluxation-Based Chiropractic Care

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Introduction

It is estimated that 19.1% of adults in the United States suffered from some form of anxiety disorder in 2016, and it is estimated that 31.1% of adults in the United States experiences some form of anxiety disorder at some point in their lives (“Any Anxiety Disorder”, n.d.). Depression is one of the most common mental disorders in the US, and in some patients it can lead to severe impairment. It is estimated that 17.3 million adults suffered from at least one major depressive episode in 2017, this means that 7.1% of all U.S. adults suffered from at least one episode (“Major Depression”, n.d.). Abnormal heart palpitations is the most common symptom in patients with psychiatric disorders such as anxiety and somatization disorders (Alijaniha et al., 2016), and it is also one of the most common symptom presenting to cardiology clinics today (Jonsbu, Dammen, Morken, & Martinsen, 2010). Historically chiropractic has been involved in the care of patients with mental health conditions like anxiety and depression (Kent, 2018). Multiple case studies have shown the positive effects of chiropractic care with patients suffering from anxiety, depression, and abnormal heart palpitations (Genthner, Friedman, & Studley, 2005; Shreeve & La Rose, 2011; Prater-Mannor, Clifton, & York, 2015; Behrendt & Olsen, 2004). Furthermore, a systematic review found that there was moderate evidence that “spinal manipulation” improved psychological markers when compared with traditional verbal interventions (Williams et al., 2007). Interestingly, inflammatory markers have been associated with decreased psychomotor speed in patients with major depression, as measure by finger tap test (Goldsmith et al., 2017), and this case study reveals improvement in this area. The vertebral subluxation complex might therefore be a missing link between inflammation, psychomotor response, and depression in patients. This paper describes the case of a 35-year old Hispanic male who presented to the office suffering from anxiety, depression, and abnormal heart palpitations and the improvements he had with subluxation-based chiropractic care.

Intervention and Outcomes

The patient was evaluated using computerized surface electromyography (sEMG), PostureScreen postural analysis software, CNS Tap Test Application, and ranges of motion (ROM). Vertebral subluxations were found in different areas of the spine. Using Pettibon chiropractic style adjustments and corrective postural rehabilitation the patient was seen for twelve visits. The Arthrostim adjusting instrument and manual high velocity low amplitude (HVLA) forces were utilized to correct subluxations. After the twelve chiropractic adjustments, a progress exam was performed and the patient reported that since the first adjustment his symptoms had completely disappeared. Positive changes were also seen in sEMG reading, CNS Tap Test and postural abnormalities, which is evidence of structural and functional improvements.

Conclusion

This case study provides supporting evidence of the benefits of subluxation-based chiropractic care in the resolution of symptoms associated to anxiety, depression, and abnormal heart palpitations. Multiple cases have been published in the literature regarding the improvement of anxiety, depression, and abnormal heart palpitations with subluxation based chiropractic care, yet more research is warranted at this moment in this important area in order to establish a cause and effect relationship.

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Limitations of Matter and Adaptation

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Our early chiropractic philosophers, like scientists of their time, proposed concepts about how the body works and the intricate way that interruptions in proper function can affect one's ability to thrive in society. It is amazing that even with the lack of technological advancements that enable today's scientists to measure neurophysiology with relative ease, our early chiropractic philosophers proposed principles and constructs which are being proven today by science, nearly 120 years later.

Today's chiropractors and students of chiropractic must study with great robustness our rich chiropractic philosophy and understand the principles which make chiropractors separate and distinct from all other professions. We have at our disposal a philosophy that looks at life processes and explains so much of what is being proven today by countless other disciplines, including psychophysicologists, neurologists, and biosocial scientists. Proper expression of life requires the uninterrupted transmission of mental impulses from brain cell to tissue cell, as well as intact and fully functional matter. Any interruption of the mental impulse from brain cell to tissue cell causes incoordination/dis-ease. Additionally, limitations of matter adversely affect how a living body responds to cues, behaves within its environment and ultimately adapts to its environment. While it is not the chiropractor's role to address limitations of matter, it is the chiropractor's role to understand that limitations of matter can affect life and, thus, how one socially interacts with other individuals and/or groups.

Our early chiropractors were far ahead of their time in terms of understanding life. Their development of the chiropractic constructs demonstrated their keen ability to deduce our 33 Principles from the Major Premise, which provided us with our unique way of looking at the world and how humans relate to their environment. They recognized that the full expression of life requires proper transmission of the mental impulse via efferent nerve pathways from brain cell to tissue cell, with a return communication via the afferent nerve pathway of tissue cell to brain cell. In addition, the matter in which Innate works must be sound and not limited in its ability to perform its function. We are provided a truly unique opportunity to serve humanity by understanding our chiropractic philosophy and the principles which form the foundation of our purpose. Once understood, we must appropriately apply that knowledge and, in so doing, chiropractors will assist humanity in expressing its innate potential to its fullest. When Innate is fully expressed, we will realize the state of BJ's Utopia.

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Introduction

Chiropractic care has been shown to be an effective tool to improve balance, dizziness and vertigo symptoms (Strunk, & Hawk 2009; Kesinger, & Boneva, 2000; Stone-McCoy, & Taylor, 2016; Burcon, 2008). Trauma to the neck as a mechanism of action can damage proprioceptors in the musculature surrounding the cervical articulations, and this damage could alter afferent input into the spinal cord and the brainstem, which could ultimately lead to vertigo symptoms (Fitz-Ritson, 1991). Facial paralysis or Bell's palsy has also been reported to improve under chiropractic care (Rubis, 2013; Alcantara, Plaugher, & Van Wyngarden, 2003). Interestingly trauma to the head and neck could be a causative factor in Bell's palsy, which means both conditions previously mentioned could have similar etiologies (Odebode, & Ologe, 2006). Interestingly, one case in the literature points to the benefits of subluxation-based chiropractic care in the improvement of dyslipidemia (Fedorchuk, Burk, & Phillips, 2011). This paper describes the case of a 47-year old male who presented with complains of neck pain, numbness and tingling of the hands, vertigo, Bell's palsy, dyslipidemia and vertebral subluxations. Patient was unable to drive due to the severity of the vertigo, his facial paralysis had started one month prior and was getting worst. For five years his medical doctor had been trying to lower his cholesterol and triglycerides with different drugs with no results.

Intervention and Outcomes

The patient received diversified and "Pettibon System" style adjustments for a period of 2 months (20 chiropractic adjustments). In that time frame he experienced complete resolution of vertigo symptoms, and his facial paralysis had improved by 95%. Furthermore, his total cholesterol went from 200 to 117 mg/dl, his triglycerides went from 300 to 146 mg/dl, his LDL went from 250 to 55 mg/dl and his HDL went from 16 to 32 mg/dl. Patient reported that no other health interventions (ie. nutrition or exercise) had been performed during this time frame.

Conclusion

This case study provides supporting evidence to the role of vertebral subluxation in the development of vertigo, Bell's palsy and dyslipidemia. As reported in this case subluxation-based chiropractic care can be helpful in the management and improvement of the aforementioned conditions. More research in this subject area is warranted at the moment in order to establish a causal relationship.

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Guidelines for the Clinical Management of Vertebral Subluxation: A Progress Report

Anquonette Stiles DC, MPH (presenting), Christie Kwon DC, MS, Matthew McCoy DC, MPH

Background

Now more than ever in the history of the chiropractic profession the vertebral subluxation concept is under attack. From the general care of children to specific denunciations of vertebral subluxation management itself in all populations, the requirement for accountability and evidence in relation to safety and efficacy are placing a strain on the forward momentum of this clinical practice focus. As the chiropractic profession focuses more of its clinical, educational and political resources towards the practice of primary care and ancillary interventions, the role of vertebral subluxation management is becoming increasingly marginalized. Various groups have developed Practice Guidelines, Standards of Care, Best Practices and other documents that offer guidance as to the clinical landscape of chiropractic.¹⁻⁴ However, at this time there is no current and credible guideline or best practices document that focuses solely on the vertebral subluxation in chiropractic practice.

Methods

A Guidelines Committee was formed under the aegis of the Foundation for Vertebral Subluxation (FVS) with representation from throughout the subluxation-centered chiropractic community. The Committee includes practicing chiropractors, researchers, academics, legal experts and laypersons to ensure broad representation of the constituents the guideline is intended to represent.

A Working Group was established to develop the detailed methodology necessary to conduct a thorough review of the literature and to develop best practices recommendations based on an informed review of that literature followed by the drafting of a suitable document for review by the Guidelines Committee.

The Work Group is managed by a Project Manager who will lead a team of research assistants that will do the actual searching, gathering and organizing of the literature. The PM will also be involved in writing related to the final recommendations and related content for the document. The entire Work Group will be overseen by a Steering Committee made up of several individuals with extensive experience in guideline development.

Following review by the Guidelines Committee the document will be put through a peer review process that will include hundreds of practitioners and experts completing a structured review and providing recommendations for changes.

Following the peer review process the Guidelines Committee Work Group will develop a final version of the document for approval by the Guidelines Committee and then the Executive Board of the FVS. Once approved, the document will be published, disseminated and submitted to the National Guideline Clearinghouse of the Agency for Healthcare Research & Quality of the United States Federal Government for consideration of inclusion.

Results

To date the literature review and gathering has been completed on the following twelve (12) integrative compilations of the literature (referred to as “Chapters”) and we are currently in the next phase of the project which involves drafting the chapters for review on the following topics:

1. History and chiropractic examination
2. Instrumentation
3. Radiographic and other imaging
4. Clinical impression, assessment and recordkeeping
5. Reassessment and outcomes assessment
6. Modes of adjustive care
7. Duration of care for correction of vertebral subluxation
8. Chiropractic care for children
9. Maternal chiropractic care
10. Vertebral Subluxation and well being
11. Behavioral and mental health issues
12. Patient safety, privacy and advocacy

This presentation will review the results of the literature search and gathering as well as the progress made in compiling these data into Chapters.

Conclusion

The profession finds itself at a crossroads relative to the clinical management of vertebral subluxation and those factions that adhere to this clinical strategy need to embrace the responsibility to produce guidelines that outline best practices in this area. This presentation will review a project to search, gather and review the current and existing literature on the management of vertebral subluxation and develop recommendations for best practices based on that review.

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An Investigation of Glial Scarring & Myelin Inhibitors Through the Lens of the 33 Chiropractic Principles.

Dan Becker DC, MEd, CCSP, Brian Dooley DC, ACP

Spinal cord injuries affect 17,700 people every year (1). For patient's that have a spinal cord injury, rehabilitative outcomes are bleak, despite a burgeoning research field. Through research, scientists have discovered several mechanisms as to why the CNS does not regenerate as the PNS does. The broader inhibitory factors being glial scarring and myelin associated inhibitors such as NogoA and Myelin Associated Glycoprotein (MAG), among others. These factors have shown to create an unhospitable environment for CNS regeneration (2). Despite advances made in understanding the mechanisms why the CNS does not regenerate in vivo, there have been no concrete explanations as to why the body, being a self-healing organism, attempts to prevent healing of the CNS through axon regeneration.

The purpose of this investigation is to attempt to explain the inability of the CNS to regenerate through the application of the chiropractic principles, specifically principles 24, "The Limits of Adaptation – Innate Intelligence adapts forces and matter for the body as long as it can do so without breaking a universal law, or Innate Intelligence is limited by the limitations of matter." and Principle 25, "The Character of Innate Forces – The forces of Innate Intelligence never injure or destroy the structures in which they work." This presentation will attempt to see if the body's own responses to CNS damage are violations of principle 25.

If principle 25 is accurate, there must be a reason the body inhibits CNS repair. If so, what are potential reasons, and what possible ramifications are there, to the body's physiology if science finds a "cure" and the educated minds of scientists try to over-ride the innate intelligence of the body?

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A Literature Review of L5 Coupled Motion to Increase Specificity of Vertebral Subluxation Evaluation

Alan Brewster BS, DC (presenting), George A. Auger BS, BSEE, DC, FCSC (hon)

Objective

An understanding of the unique coupled motion at L5 may facilitate a more precise evaluation of the malposition components of a vertebral subluxation. Coupled motion of the lumbar spine is often taught as non-reciprocal coupling of primary lateral flexion (ΘZ) with contralateral axial rotation (ΘY); that is, “spinouses into the concavity”. However, the coupling revealed in the research for L5 is often more paradoxical, with several variations and confounding factors.

Methods

A literature search was conducted using “lumbar”, “L5”, “coupled”, and “coupling”. Online resources were used from the Sherman College Library; sites such as ResearchGate, ScienceDirect, and Google Scholar; as well as common texts used to study biomechanics. Studies were selected on the criterion that they specify coupled motion at L5 individually, rather than merely combining motion for the lumbar region as a whole. Our intent was to parse details from various studies and relate them to characteristics of vertebral subluxation.

Results

Coupling at L5 does not always follow the standard mechanism, and often exhibits “atypical” ipsilateral rotation with primary lateral flexion. In the reverse, primary axial rotation of L5 almost exclusively exhibits coupled ipsilateral lateral flexion. When muscles were discussed, those studies concluded that paraspinal muscles were not responsible for coupling characteristics.

Conclusion

We may use differing patterns of coupling to identify the primary malposition component of a vertebral subluxation and potentially improve the adjustment. Specifically, the line of correction may be modified to emphasize the primary rotation, and the patient posture may also be modified to correct for coupling. Also, since the muscles are not directly involved in coupling, we may continue to use muscle palpation to categorize the subluxation.

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KEYNOTE: A New Look at Chiropractic Basic Science

Claude Lessard DC

Introduction

Background

1. Stages of Human Brain Growth
 2. Evolution of Scientific Knowledge
 3. Why is has the percentage of population utilizing chiropractic care remained a steady 10% over the last 100+ years?
 4. Examples of Visionaries
- Progression of Theoretical Physics
 - Newton's Laws
 - Electromagnetic Fields
 - Quantum Physics
 - Meta Theories
 - Post Infocomic Subatomic Absolutes / Post Universal Truth (Have we substituted universal truths with personal truths?)
 - Basic Science vs. Applied Science ¹

	Basic Science	Applied Science
Meaning:	- Expand Scientific Knowledge	- Solve Practical Problem
Nature:	- Theoretical	- Practical
Utility:	- Universal	- Limited
Concerned with:	- Predictive	- Technotechnic
Goal:	- Add to Existing Knowledge	- Solution to Problems

Governance of Universal Laws

- Universal Law of Gravity
- Universal Law of Organization Described as Law of Conservation of Energy/Matter²
- Universal Law of ACTIVE organization Described as Newton's Law of Motion
 $F = ma \Rightarrow \text{Force} = \text{mass} \times \text{acceleration}$ Evolved $\rightarrow E = mc^2 \Rightarrow \text{Energy} = \text{mass} \times (\text{speed of light})^2$
Energy is interchangeable with matter
- Force in chiropractic is information (Chirabella)³ Intelligence- Information- Cosmos
"The pure chemistry of a cell is not enough to explain the workings of a cell, although the workings are chemical. The chemical workings of a cell are controlled by information which does not reside in the atoms and molecules" Dr. A.E. Wilder-Smith
- Universal Law of time as Hyperphysics ⁴
- Universal Law of Cause and Effect Demonstrated as the Fundamental Symmetry Principles of the Universe

Conclusion

- Humanitarian Problem at Hand (Vertebral Subluxation)
- Practical Identification of Chiropractic Objective
- Universal Values
 - Quantum No-Hiding Theorem⁵
"The no-hiding theorem says that if any physical process leads to bleaching of quantum information from the original system, then it must reside in the rest of the Universe with no information being hidden in the correlation between these two subsystems."

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33 Chiropractic Principles

1. **The Major Premise-** A Universal Intelligence is in all matter and continually gives to it all its properties and actions, thus maintaining it in existence.
2. **The Chiropractic Meaning of Life-** The expression of this intelligence through matter is the Chiropractic meaning of life (existence).
3. **The Union of Intelligence and Matter-** Life is necessarily the union of intelligence and matter.
4. **The Triune of Life-** Life is a triunity having three necessary united factors, namely: Intelligence, Force, and Matter.
5. **The Perfection of the Triune-** In order to have 100% Life, there must be 100% Intelligence, 100% Force, and 100% Matter.
6. **The Principle of Time-** There is no process that does not require time.
7. **The Amount of Intelligence in Matter-** The amount of intelligence for any given amount of matter is 100%, and is always proportional to its requirements.
8. **The Function of Intelligence-** The function of intelligence is to create force.
9. **The Amount of Force Created by Intelligence-** The amount of force created by intelligence is always 100%.
10. **The Function of Force-** The function of force is to unite intelligence and matter.
11. **The Character of Universal Forces-** The forces of Universal Intelligence are manifested by physical laws; are unswerving and unadapted, and have no solicitude for the structures in which they work.
12. **Interference with Transmission of Universal Forces-** There can be interference with transmission of universal forces.
13. **The Function of Matter-** The function of matter is to express force.
14. **Universal Life-** Force is manifested by motion in matter; all matter has motion, therefore there is universal life in all matter.
15. **No Motion without the Effort of Force-** Matter can have no motion without the application of force by intelligence.
16. **Intelligence in both Organic and Inorganic Matter-** Universal Intelligence gives force to both organic and inorganic matter.
17. **Cause and Effect-** Every effect has a cause and every cause has effects.
18. **Evidence of Life-** The signs of life are evidence of the intelligence of life.
19. **Organic Matter-** The material of the body of a "living thing" is organized matter.
20. **Innate Intelligence-** A "living thing" has an inborn intelligence within its body, called innate intelligence.
21. **The Mission of Innate Intelligence-** The mission of Innate Intelligence is to maintain the material of the body of a "living thing" in active organization.
22. **The Amount of Innate Intelligence-** There is 100% of Innate Intelligence in every "living thing", the requisite amount, proportional to its organization.
23. **The Function of Innate Intelligence-** The function of Innate Intelligence is to adapt universal forces and matter for use in the body, so that all parts of the body will have co-ordinated action for mutual benefit.
24. **The Limits of Adaptation-** Innate Intelligence adapts forces and matter for the body as long as it can do so without breaking a universal law, or Innate Intelligence is limited by the limitations of matter.
25. **The Character of Innate Forces-** The forces of Innate Intelligence never injure or destroy the structures in which they work.
26. **Comparison of Universal and Innate Forces-** In order to carry on the universal cycle of life, Universal forces are destructive, and Innate forces constructive, as regards structural matter.

27. **The Normality of Innate Intelligence-** Innate Intelligence is always normal and its function is always normal.
28. **The Conductors of Innate Forces-** The forces of Innate Intelligence operate through or over the nervous system in animal bodies.
29. **Interference with Transmission of Innate Forces-** There can be interference with the transmission of Innate forces.
30. **The Cause of Dis-ease-** Interference with the transmission of Innate forces causes incoordination or dis-ease.
31. **Subluxations-** Interference with transmission in the body is always directly or indirectly due to subluxations in the spinal column.
32. **The Principle of Coordination-** Coordination is the principle of harmonious action of all the parts of an organism, in fulfilling their offices on purposes.
33. **The Law of Demand and Supply-** The Law of Demand and Supply exists in the body in its ideal state; wherein the nerves transmit messages from the body, concerning its needs, to the brain, which acts as the central processing unit for the body's innate intelligence, and from the brain to the body to meet those needs.

GLOSSARY (CHIROPRACTIC'S UNIQUE LEXICON)

In order to continue our exploration of looking at the OLD centrally core process of chiropractic in a NEW way, we must be on the same page. Moving forward and evolving consciously together, without condemnation, requires that we agree on terms. I have compiled, with the help of Joe Strauss, a glossary of terms directly from the Chiropractic Textbook by RW Stephenson for use in this book. I have also added some NEW terms that I believe are uniquely needed for practicing the chiropractic objective.

1. Adaptability (sign of life): The intellectual ability that an organism possesses of responding to all information (forces) which come to it, whether innate or universal.
2. Intellectual adaptation: The mental process of innate intelligence to plan ways and means of using or circumventing universal information (forces).
3. Adaptation: The movement of an organism or any of its parts; or the structural change in that organism, to use or to circumvent environmental information (forces). Adaptation is a continuous process — continually varying, it is never constant and unvarying as are other universal laws. Adaptation is a universal principle — the only one of its kind. It is the principle of change, and the changes are always according to law, which is intellectual adaptation.
4. Assimilation (sign of life): The power of assimilation is the ability of an organism to take into its body food materials selectively, and make them a part of itself according to a system or intelligent plan.
5. Innate brain: a) That part of the brain used by innate intelligence (law of ACTIVE organization), as an organ, in which to assemble mental impulses. b) That part of the brain used by innate intelligence (law of ACTIVE organization), as an organ, in which to adapt universal information (forces) and assemble them into foruns.
6. Educated brain: That part of the brain used by innate intelligence (law of ACTIVE organization), as an organ, for reason, memory, education, and the so-called voluntary functions.
7. Physical brain: That part of the brain used by innate intelligence (law of ACTIVE organization) , as an organ, to transmit mental impulses for coordination of activities of all the parts of a living organism.
8. Educated Intelligence: The capability of the educated brain to function. It starts at 0% at birth and evolved to 100% at death.
9. E/matter: This term means energy/matter. Since $E=Mc^2$, energy and matter are interchangeable since energy is simply a different configuration (properties) of electrons, protons and neutrons with varying velocities (activities). Ex: water has 2 molecules of hydrogen and 1 molecule of oxygen, whether it is in a fluid state, ice state, or vapor state. It is dependent upon the movement of its basic elements.
10. Disease and DIS-EASE: Disease is a term used by physicians for sickness. To them it is an entity and is worthy of a name, hence diagnosis. DIS-EASE is a chiropractic term meaning not having ease; or lack of ease. It is lack of entity. It is a condition of e/matter when it does not have the property of ease. Ease is the entity, and DIS-EASE the lack of it.
11. Educated mind: Educated mind is the activity of innate intelligence (law of ACTIVE organization) in the educated brain as an organ. The product of this activity is educated thoughts; such as, reasoning, will, memory, etc. Innate intelligence (law of ACTIVE organization) controls the functions of the “voluntary” organs via the educated brain. Educated thoughts are mostly for adaptation to things external to the body.
12. Mental forces: A mental force is that something which is information uniting intelligence and e/matter. It is transmitted by nerves for coordination of activities and is called mental impulse because it impels tissue cells to intelligent action.
13. Universal forces: Universal forces are universal information created by universal intelligence (law of organization) which are subjected to physical laws, and are not adapted for structural constructive purposes.
14. Invasive forces: Invasive forces are universal information which act powerfully upon tissue in spite of the innate resistance of the body; or in case the resistance is lowered.
15. Penetrative forces: Penetrative forces are invasive forces; they are information which act powerfully assailing the body and that have effect upon tissue, in spite of the innate resistance of the body;
16. Innate forces: Innate forces are universal forces that are adapted by the law of ACTIVE organization and arranged for use in the body. They are universal forces assembled or adapted for dynamic functional power to cause tissue cells to function; or to offer resistance to the environment.

17. Resistive forces: Resistive forces are internal innate information opposing invasive or penetrative forces. They may be in many forms... as physical, chemical, or mechanical. They are not called resistive forces unless they are of that character.
18. Growth (sign of life): The power of growth is the ability to expand according to intelligent plan to mature in size, and is dependent upon the power of assimilation.
19. Impressions: The information of the tissue cell to innate intelligence (the law of ACTIVE organization) concerning its welfare and doings.
20. Innate mind: The activity of innate intelligence (law of ACTIVE organization) in the innate brain as an organ.
21. Mental impulse: A unit of information for a specific tissue cell, for a specific function. Specific information to a tissue cell for the present moment.
22. Poison: Poison is any substance introduced into or manufactured within the living body which the law of ACTIVE organization (innate intelligence) cannot use in metabolism.
23. The chiropractic definition of vertebral subluxation: A vertebral subluxation is a condition of a vertebra that has lost its proper juxtaposition with the one above or the one below, or both... to an extent less than a lutation... which impinges upon a nerve and interferes with the transmission of mental impulses.
24. Vibration: The motion of a tissue cell in performing its function.
25. Objective of chiropractic: The chiropractic objective is to locate, analyze and facilitate the correction of vertebral subluxations for the full expression of the innate forces (information) of the innate intelligence of the body. PERIOD!
26. Educated universal information (forces): Educated universal forces (information) are forces used by people for so-called voluntary functions with limited intelligent direction.
27. Vertebral adjustment: A vertebral adjustment is a universal force (information) adapted by the law of ACTIVE organization (innate intelligence) for the correction of a vertebral subluxation.
28. Adjustic thrust: An adjusted thrust is a specific educated universal force (information) introduced into a subluxated vertebra of a person by a chiropractor with the intent that the law of ACTIVE organization (innate intelligence) will produce a vertebral adjustment.
29. Objective chiropractor (OC): An objective chiropractor (OC) is a chiropractor WHO chooses to practice ONLY the chiropractic objective. Also called an objective straight chiropractor (OSC) and a non-therapeutic objective straight chiropractor (NTOSC).
30. Matter: Electrons, protons, and neutrons configured at less than the square of the speed of light.
31. Energy: Electrons, protons, and neutrons configured at the square of the speed of light.
32. E/Matter: Term reminding us that energy and matter are interchangeable as per $E=mc^2$
33. Information: Coded instruction to configure electrons, protons, neutrons, and their velocities.
34. Infocosmic: Of the Triune of Universal Life.
Intelligence (Law of Organization) - Force (Information) - Matter (Energy/Matter)

Developing an Evidence-Informed Culture at Sherman College of Chiropractic

Christopher Kent DC, JD (presenting), Sarah Stephens DC

“The mission of Sherman College of Chiropractic is to educate and prepare students to become doctors of chiropractic.” This mission is based upon the college’s core values and is achieved through activities in the areas of education, research and service. Our constituencies are demanding a higher level of scholarly activity from faculty.

Evidence-Informed curriculum and practice is an essential element of implementing these core values. The process involves the following steps:

- Evaluate the evidence base for each course. Is the material taught supported by textbooks, scientific literature, individual expertise, or a combination of these?
- Identify any gaps in the evidence for what is taught.
- Review the available literature to see which gaps can be filled.
- This may lead to recommendations for curriculum and policy change, and help develop a research agenda to fill the gaps that remain.

Implementation of a culture of evidence-informed curriculum and practice will be described. The process involved the appointment of an evidence-informed coordinator, followed by hiring of a full-time director of evidence-informed curriculum and practice. The process involved the introduction of three new courses in the regular D.C. curriculum, faculty workshops, intern workshops, newsletter publications for faculty, and individual consultations. Surveys of faculty and students have been completed to provide a baseline, and to enable assessment of the effects of implementation.

Resolution of Neck Pain and Cervicogenic Vertigo in Patients Following Blair Upper Cervical Chiropractic Treatment to Correct Vertebral Subluxations: A Case Series

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Introduction

Cervicogenic vertigo also known as cervicogenic dizziness, is a clinical syndrome characterized by the presence of disequilibrium or dizziness with associated neck pain. This condition has been difficult to differentiate from other causes of vertigo such as vestibular and vascular disorders. Chiropractic patients presenting with neck pain, especially due to whiplash injuries, may also complain of intermittent vertigo. Specific protocol for identifying and treating this condition is being developed by healthcare professionals. This paper is a retrospective study to evaluate the resolution of neck pain and cervicogenic vertigo in three patients, two males, 37 and 55 years of age and a 49-year-old female, under Blair upper cervical (UC) chiropractic care to correct vertebral subluxations.

Methods

Patients received detailed case histories and physical examinations inclusive of vital signs, posture evaluation, neurological tests, orthopedic tests, and cervical static and motion palpation. Cervical thermographic scanning was performed to determine each patient's thermal pattern. In accordance with the Blair UC technique protocol, leg length inequality (LLI) evaluations were performed using the Thompson Derifield, Cervical Syndrome, and modified Prill leg checks. Blair cervical x-ray series were taken to evaluate the atlanto-occipital articulation for vertebral subluxation. Each patient received a Blair UC adjustment according to their specific atlas subluxation and were rested in recliners for one-hour post adjustment. Patients received individualized care plans which included two weekly visits of which adjustments were performed based upon Blair UC protocol.

Result

The three patients reported reduction in neck pain and cervicogenic vertigo after first adjustment. After an average of 16 visit symptoms of neck pain and cervicogenic vertigo had resolved and patients reported increased quality of life.

Conclusion

The patients in this case series experienced significant improvement which demonstrated the need for further investigation for the use of specific methods of correcting the upper cervical subluxations in similar cases.

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Resolution of Medial Knee Pain and Improvement in Static Surface Electromyography in an Elite 800-Meter Runner Undergoing Subluxation-Based Chiropractic Care

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Introduction

Running is commonly utilized around the world as a means to achieve physical fitness. A problem with the sport is its relatively high level of injury rate, ranging from 19% to 79%, being the predominant site of injury the knee joint (van Gent et al., 2007). Certain evidence has found that more than 80% of injuries are due to overuse and not acute type (Walther, Reuter, Leonhard, & Engelhardt, 2005). Elite athletes have increased the utilization of chiropractic services, for example during the 2013 world games in Colombia 537 of the 2964 accredited athletes sought chiropractic care for multiple conditions, and 86.9% reported immediate improvement after receiving chiropractic care (D. Nook, E. Nook, & B. Nook, 2016). Furthermore nearly 50% of chiropractors who answered a research survey as part of the Australian Chiropractic Research Network reported that they frequently cared for athletes in their clinics or at sporting events (Adams et al., 2018). In the author's opinion chiropractic care should be included in all elite athlete's training and recovery plan. Evidence shows that chiropractors with post-graduate training in sports chiropractic want to see more research being done in the "sports performance" arena and not only in injury related care. (Lee, Szabo, McDowell, & Granger, 2016). Interestingly, research by Moreley, et al. has suggested that hypo-mobility of the thoracolumbar spine could lead to lower extremity injuries due to alterations in load transfer from fascia and muscles of the spine to the lower extremity. Ground reaction forces, EMG activity, oxygen consumption, and vertical movement of the center of mass were altered when thoracolumbar mobility was restricted by thermoplastic casting (Morley & Traum, 2018; Morley & Traum, 2016; Morley & Traum 2019). This case describes the resolution of medial knee pain in a 23 -year old two-time Olympic 800-meter runner who was being forced to retire because of a lack of improvement with traditional methods. Subluxation-based chiropractic care was utilized exclusively in the spinal column and subsequently the symptoms in his extremity disappeared.

Intervention and Outcomes

The patient was evaluated using computerized static surface electromyography (sEMG) and spinal radiographs. Vertebral subluxations where found in different areas of the spine. Using Pettibon chiropractic style adjustments and corrective postural rehabilitation, the patient was seen for twelve visits. The Arthrostim adjusting instrument and manual high velocity low amplitude (HVLA) forces where utilized exclusively to the spinal column to correct subluxations based on chiropractic radiographic findings. After the twelve chiropractic adjustments, a progress exam was performed and the patient reported that his medial knee pain had resolved, and he could resume normal training. Positive changes were also seen in sEMG reading after care.

Conclusion

This case study provides supporting evidence of the benefits of subluxation-based chiropractic care in the resolution of medial knee pain without doing any treatment directly to the knee. Anecdotal evidence in thousands of cases in chiropractic offices around the world has commonly revealed these kinds of results. More research is needed in order to find the mechanisms of action of this type of scenario.

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The Styloid Effect on Upper Cervical Chiropractic Care

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This presentation will focus on parameters and considerations of the upper cervical subluxation in cases with elongated styloid processes, known as Eagle's Syndrome. Topics to be reviewed include published literature on the vascular implications of Eagle's Syndrome in consideration of upper cervical anatomy, correlation of these vascular implications to neuropathophysiologies, prevalence of Eagle's Syndrome in chiropractic clinics, correlative physical examination findings associated with upper cervical subluxation in conjunction with Eagle's Syndrome, and possible contraindications of chiropractic methods in these types of cases.