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CHIROPRACTIC ADJUSTMENTS IMPROVE VERTEBROBASILAR INSUFFICIENCY: TWO CASES

Vertebrobasilar syndrome (VBS) is the terminology used to describe a number of events that ultimately result in ischemia to the midbrain. The symptoms, which may be transient or permanent, may even lead to death. Across the years a number of case reports, and one case- control study have suggested that VBS may be associated with spinal manipulative therapy of the cervical spine. The frequency of VBS following spinal manipulative therapy is believed to be rare, with a reported occurrence of 1 in 400,000 to 1 in 12,000,000.

The most common signs and symptoms of VBS are dizziness, vertigo, giddiness, and lightheadedness. Other major symptoms can occur, including drop attack and/or loss of consciousness, diplopia or other visual problems, dysarthria, dysphagia, ataxia of gait, nausea, numbness, and nystagmus. The onset of ischemic signs and symptoms can occur immediately to several days later.

This article describes 2 cases where chiropractic adjustments improved pre-existing vertebrobasilar insufficiency.

The authors examined cerebral arterial blood flow in the 2 patients each of whom exhibited signs of vertebrobasilar arterial ischemia (VBI) before and after chiropractic care.

Each of the two patients had a repetitive/ resting tremor, one from a spastic torticollis with the onset immediately after self-manipulation by the patient 6 months earlier, and the second one with a generalized resting tremor, hip clonus, dizziness, and presyncope. The diagnosis of vertebrobasilar ischemia was established by continuous wave Doppler ultrasound and physical examination.

The patients were adjusted using non-rotary cervical adjustments and diversified technique to the thoracic spine. In the first patient, the spastic tremor improved by 80%. The repeat Doppler performed 13 months later showed an improvement in the arterial flow in the right external carotid artery peak flow. In the second patient, the resting tremor diminished in 4 days, with the peak systolic flow improving in both the right common carotid artery and the left vertebral artery.

Both cases initially had impaired vertebral arterial flow. The symptoms of VBI and objective Doppler findings improved following chiropractic adjustment.

The authors concluded that chiropractic adjustments may have a normalizing effect on the

Reference: Jensen TW. Vertebrobasilar ischemia and spinal manipulation. *J Manipulative Physiol Therap* 2003;26:443-7.

sympathetic nervous system, allowing for a change in vasospastic cerebral vascular arteries.

GASTROINTESTINAL SYMPTOMS SECONDARY TO IMPLANTED SPINAL CORD STIMULATORS

A group of researchers, from the Department of Anesthesiology, Baystate Medical Center, Massachusetts, USA, recently reported severe gastrointestinal symptoms in two patients who had implanted spinal cord stimulators (SCS). In both cases the SCS was implanted for the purpose of relieving chronic pain.

The side effects were severe enough to require cessation of the stimulation, even though the patients reported significantly improved analgesia.

The authors conclude, "It is important for clinicians caring for patients with these devices to be aware of these potentially severe side effects."

Reference: Thakkar N, Connelly NR, Vieira P. Gastrointestinal symptoms secondary to implanted spinal cord stimulators. *Anesth Analg*. 2003;97:547-9.

ASRF Update Editor's comments - I find these two cases particularly interesting in that they offer some, albeit weak, support for the clinical observations of many practicing chiropractors on at least two levels - First, these two cases suggest that aberrant input at the level of the spinal cord may have a deleterious effect on a neurologically related visceral end-organ. Secondly, short-term relief, via the masking of symptoms, may come at a price - long-term well being. Of course one must be careful in drawing even tentative conclusions from a case series wherein the study design is descriptive and retrospective, thus precluding anything more than the suggestion that the observations are interesting and warrant further investigation.

INTRA-ARTICULAR GAS BUBBLES IN ZYGAPOPHYSEAL JOINTS OF THE CERVICAL SPINE AFTER SPINAL MANIPULATION

These authors attempted to analyze the size and density of cervical zygapophyseal joint spaces in asymptomatic subjects using computed tomography (CT) and plain film radiography. The joint spaces were analyzed before manipulation without traction, before manipulation with manual traction, after manipulation without traction, and after manipulation with manual traction. The data obtained before the manipulation were compared with data obtained after the manipulation to determine if significant alterations occurred.

Twenty-two asymptomatic subjects were placed into 1 or more of 6 possible experimental groups. In all experimental groups, except for experiment 1, the subjects underwent:

(step 1) a pre-manipulation radiograph and/or CT scan,
(step 2) a pre-manipulation plus traction radiograph and/or CT scan,
(step 3) a post-manipulation radiograph and/or CT scan, and
(step 4) a post-manipulation plus traction radiograph and/or CT scan.

Except for experiment 2, there was no significant change in the width, area, and density values of the zygapophyseal joint spaces immediately after the manipulation in either the traction or traction-free positions of the neck, and no visible radiolucent cavities were demonstrated in any view.

These findings are not consistent with the current understanding of cavitation in joints, in particular, the refractory period.

References: Cascioli V, Corr P, Till Ag AG. An investigation into the production of intra-articular gas bubbles and increase in joint space in the zygapophyseal joints of the cervical spine in asymptomatic subjects after spinal manipulation. *J Manipulative Physiol Ther.* 2003;26:356-64.

CHIROPRACTIC CARE OF A PEDIATRIC PATIENT WITH MYASTHENIA GRAVIS

The authors of this case report aimed to describe the chiropractic care of a pediatric patient with complaints associated with myasthenia gravis.

A 2-year-old girl was provided chiropractic care at the request and consent of her parents for complaints of ptosis and generalized muscle weakness (ie, lethargy), particularly in the lower extremities. Prior to entry into chiropractic management, magnetic resonance imaging of the brain and acetylcholine receptor antibody tests were performed with negative results. However, the Tensilon test was positive and the diagnosis of myasthenia gravis was made by a pediatrician and seconded by a medical neurologist.

The patient was cared for with contact-specific, high-velocity, low-amplitude adjustments to sites of vertebral subluxation complexes in the upper cervical and sacral spine. The patient's response to care was positive and after 5 months of regular chiropractic treatment her symptoms abated completely.

The authors state,

“To the best of our knowledge, this is the first report in the scientific literature describing chiropractic in a pediatric patient with MG. Adjustive care was provided based on the objective and subjective parameters of vertebral and sacral findings, interpreted as vertebral subluxation complex. Prospective research into the efficacy of this approach to health care is encouraged. The possible role of an

environmental trigger (eg, spinal trauma) antecedent to the development of MG symptoms and the salutary effects of chiropractic care need to be explored.”

The authors conclude,

“There are indications that patients suffering from disorders ‘beyond low back pain’ as presented in this case report may derive benefits from chiropractic care.”

Reference: Alcantara J, Plaugher G, Araghi HJ. Chiropractic care of a pediatric patient with myasthenia gravis. *J Manipulative Physiol Ther.* 2003;26:390-4.

ANTIHISTAMINES PROLONG EAR INFECTIONS

Recent survey results suggest that 19% of medical practitioners in the US are now using antihistamines in the treatment of acute otitis media (AOM). Furthermore, it appears as though this trend is on the rise because doctors are becoming reluctant to prescribe antibiotics out of fear of contributing to bacterial resistance.

However the findings from a recently published study suggest that instead of helping, antihistamines result in the delayed healing of AOM.

The objective of a recent RCT, from researchers at the Departments of Pediatrics and Pathology, University of Texas, was to determine whether antihistamine improves immediate and long-term outcomes of AOM.

A total of 179 children, all with AOM (3 mos-6 y), received one dose of intramuscular ceftriaxone and were assigned to receive either an antihistamine or placebo for 5 days.

Main outcome measures were rate of treatment failure during the first 2 weeks, duration of middle ear effusion, and rate of recurrences of AOM to 6 months.

Children who received antihistamine had significantly longer duration of middle ear effusion (median, 73 days) than subjects in the other treatment group (median, 23 to 36 days, $P=.04$).

The authors concluded,

“Five-day treatment with antihistamine, in addition to antibiotic, did not improve AOM outcomes. Antihistamine use during an acute episode of OM should be avoided, since the drug may prolong the duration of middle ear effusion.”

Reference: Chonmaitree T, Saeed K, Uchida T, Heikkinen T, Baldwin CD, Freeman DH Jr, McCormick DP. A randomized, placebo-controlled trial of the effect of antihistamine or corticosteroid treatment in acute otitis media. *J Pediatr.* 2003;143:377-85.

THE AUDIBLE POP -- NOT NECESSARY FOR SUCCESSFUL SPINAL HIGH-VELOCITY THRUST?

In this prospective cohort study the authors attempted to determine the relationship between an audible pop and symptomatic improvement with spinal manipulation in patients with low back pain (LBP).

The participants were a cohort of 71 patients with nonradicular LBP referred to physical therapy.

Participants underwent a standardized examination and standardized spinal manipulation treatment program. All patients were treated with a sacroiliac (SI) manipulative technique and the presence or absence of an audible pop was noted.

Subjects were reassessed 48 hours after the manipulation for changes in range of motion (ROM), numeric pain rating scale (PRS) scores, and modified Oswestry Disability Questionnaire (ODQ) scores.

An audible pop occurred in 50 of the 71 subjects during the manipulative procedure. Both groups - those who had an audible pop and those who did not - improved over time in flexion ROM, PRS scores, and modified ODQ scores. However, there were no differences between groups ($P > .05$).

It was concluded that there is no relationship between an audible pop during SI manipulation and signs and symptoms of improvement. Additionally, the occurrence of a pop did not improve the odds of a dramatic improvement with manipulation treatment.

Reference: Flynn TW, Fritz JM, Wainner RS, Whitman JM. The audible pop is not necessary for successful spinal high-velocity thrust manipulation in individuals with low back pain. *Arch Phys Med Rehabil.* 2003;84:1057-60.

CHARACTERISTICS OF MUSCLE TONE IN RELATION TO MODELS OF SUBLUXATION: PART 1

The authors begin this paper by reminding the reader that the position paper of the Association of Chiropractic Colleges (ACC) defines subluxation as a complex of functional and/or structural and/or pathological articular changes that compromise neural integrity and may influence organ system function and general health. Subluxation is characterized by findings of misalignment, relative fixation, loss of normal range-of-motion and endplay, tenderness, and tissue texture abnormality.

Knutson and Owen go on to contend that most of these characteristics of subluxation can be mediated by the muscular system. The authors point out that the functional association of muscles with subluxation has roots as far back as the historical "Green Books," a series of 39 volumes published by Palmer College from 1906 to 1961. In volume 14, Stevenson states, "the muscles are the means by which subluxations occur". This was restated well by Schneider who wrote, "Bones are inert structures; their alignment in space and segmental range of motion are determined by active muscle contraction and soft tissue length".

The authors believe, given the role that muscles are thought to have as a functional aspect of, and/or an effect of joint dysfunction, that the question of how muscle tone becomes dysfunctional takes on greater importance.

Their article outlines some of the mechanisms thought to cause muscle dysfunction and changes in muscle tone. Background information on muscle structure and function, including active (contractile), as well as passive (viscoelastic) properties of muscle is included. The article culminates in a clinical muscle model that incorporates classifications based on type of dysfunction, active/passive properties, and chronicity.

Reference: Knutson G, Owen EF. Active and passive characteristics of muscle tone and their relationship to models of subluxation/joint dysfunction Part I. *J Can Chiropr Assoc* 2003;47:168- 79.

LINK BETWEEN ANTIBIOTICS AND ALLERGIES/ASTHMA

Based on the findings from previous preliminary studies it has been hypothesized that the use of antibiotics may affect the gastrointestinal tract and alter the development of a child's immune system.

In order to test the association linking antibiotic use in early childhood to the subsequent development of allergies and asthma, researchers from Detroit's Henry Ford Hospital (Department of Biostatistics Et Research Epidemiology), followed 448 children from birth to seven years.

Data was collected prenatally and until the children were 6 and 7 years old, when they underwent a clinical evaluation by a board-certified allergist.

The data included information about all prescribed oral antibiotics; blood tests that measure the antibody (immunoglobulin E) that causes allergies; and skin reaction tests that show whether a person is hypersensitive to an allergen. Researchers also collected data on all clinical visits and made home visits to collect environmental samples.

Of the 448 children, 49 percent had received antibiotics in the first six months of life. The most common antibiotic category prescribed was penicillin.

The researchers found that:

* By age 7, children given at least one antibiotic in the first six months were 1.5 times more likely to develop allergies than those who did not receive antibiotics. They were 2.5 times more likely to develop asthma.

* By age 7, children given at least one antibiotic in the first six months and who lived with fewer than two pets were 1.7 times more likely to develop allergies, and three times more likely to develop asthma.

* By age 7, children given at least one antibiotic in the first six months and whose mother had a history of allergies were nearly twice as likely to develop allergies.

* By age 7, the more courses of antibiotics a child had received during their first six months, the higher the risk of developing an allergy.

Reference: This study was presented on Sept. 30th at the European Respiratory Society's annual conference in Vienna.

FABLES OR FOIBLES: INHERENT PROBLEMS WITH RCTS

For 50 years, the accepted standard by which the usefulness of a therapeutic treatment is judged has been the randomized controlled trial (RCT) -- the RCT became what is commonly regarded as the highest quality of clinical outcome study that could be mounted to allow inferences about cause and effect relationships to be drawn.

However, from the point of view of clinical practice, especially in areas in which physical treatments are applied, the principles of fastidious interventions and blinding begin to wear thin and in a few recent examples regarding so called spinal manipulation, appear to have fallen apart completely.

The following are brief descriptions of 7 case studies that Dr. Anthony Rosner draws upon to better delineate the weakness of RCT's and Meta-analyses.

1. Reduction of meta-analyses to subjective value scales
2. Occult Salami publications
3. Manipulation of experimental results
4. **Flawed RCT - Misrepresentation of intervention and over-generalisation** - Cherkin DC, et al. A comparison of physical therapy, chiropractic manipulation, and provision of an educational booklet for the treatment of patients with low back pain. N Engl J Med 1998;339:1021-1029.
5. **Flawed RCT - Improper sham procedure** - Balon J, et al. A comparison of active and simulated chiropractic manipulation as adjunctive treatment for childhood asthma. N Engl J Med 1998;339:1013-1020.
6. **Flawed RCT - Inconsistencies between pilot and full-scale trial** - Kokjohn K, et al. The effect of spinal manipulation on pain and prostaglandin levels in women with primary dysmenorrhea. J Manipulative Physiol Ther 1992;15:279-285.
7. **Flawed RCT -- Effects may be obscured in a small sample size** - Nilsson N, et al. The effect of spinal manipulation in the treatment of cervicogenic headaches. J Manipulative Physiol Ther 1997;20:326-330.

Rosner concludes that the following principles need to be maintained as a checklist with which to avoid being misled by a published RCT:

1. Outcomes of meta-analyses depend on the scoring systems used for inputs.

2. A potential exists for corruption in the comparison of pharmaceutical agents.
3. Oversampling of data may occur from duplicate (“salami”) publications.
4. Fastidious interventions in RCTs must not be confused with actual clinical treatments.
5. RCTs that include physical methods of intervention must be checked for inappropriate sham procedures.
6. Trends in RCTs may be obscured by type II errors produced by small sample sizes.
7. The results of RCTs must be confined to the parameters expressed within the investigation and not indiscriminately generalized to clinical practice.

Reference: Rosner AL. Fables or foibles: Inherent problems with RCTs. *J Manipulative Physiol Ther* 2003;26:460-7.

ASRF Update Editor’s comments: I had the opportunity to discuss this paper at length with the author earlier this year when he spent a week in Barcelona with us. Should anyone want a detailed review of this paper contact me [at in8nrg@terra.es](mailto:in8nrg@terra.es)

The following letter appeared recently in the pages of the *BMJ* -

Anecdotes as Evidence - loosing sight of the trees for the forests

I shared the same feeling as the editor in the importance of the anecdotes. However, my opinion is that such importance should be extended to all aspects of clinical medicine.

As the emphasis towards big, multi-centre, perennial, double blind, randomised studies increases disproportionately, we are seeing meta-analysis of 'umbrella' analysis of multiple big trials as used frequently in evidence based medicine.

In a sense, we are seeing more and more forests and begin to forget our trees. Under such analyses, if something is useful, then it is really very useful. On the other hand, if it is not useful in the 'forest' sense, it does not mean that it is not useful, or even very useful for a single tree.

However, in considering other cases, individual patient responses, seems to be totally disregarded in the final conclusion. **The bigger the trial the less significant the individual.** This may be okay for an armchair professor, or statistician, or a politician holding the budget. However, for the clinician, every single patient counts. Imagine this very individual patient is your mother, your wife or your son. Then it is not difficult to appreciate why our patients go more and more towards complementary medicine, even when 'statistically', many such therapies are not 'documented' to be useful.

Reference: Yip YL. Anecdotes as Evidence --- not only for side effects. *BMJ* 2003, Rapid response, 23 June.

UPPER CERVICAL CHIROPRACTIC CARE - A CHILD WITH TOURETTE SYNDROME, ATTENTION DEFICIT HYPERACTIVITY DISORDER, DEPRESSION, ASTHMA, INSOMNIA, AND HEADACHES: A CASE REPORT

This case study describes the chiropractic care, using an upper cervical technique, in the case of a nine-year old male who presented with Tourette Syndrome (TS), Attention Deficit Hyperactivity Disorder (ADHD), depression, asthma, insomnia, and headaches.

It was reported that the nine-year-old boy suffered from asthma and upper respiratory infections since infancy; headaches since age 6; TS, ADHD, depression and insomnia since age 7; and neck pain since age 8. Furthermore, his mother reported the use of forceps during his delivery. His medications included Albuterol, Depakote, Wellbutrin, and Adderall.

During the patient’s initial examination, evidence of a subluxation stemming from the upper cervical spine was found through thermographic and radiographic diagnostics. Chiropractic care using an upper cervical technique was administered to correct and stabilize the patient’s upper neck injury. Analysis and

care were performed in accordance with the guidelines provided by the International Upper Cervical Chiropractic Association.

Evaluation of the patient's condition took place through doctor's observation, patient's and parents' subjective description of symptoms, and repeated thermographic scans.

Two days after the patient's first adjustment, the subject's mother reported observing a 50% reduction in tics. Three weeks after the first adjustment, the boy's mother reported the absence of all motor tics except an occasional verbal tic while eating. Six weeks after the first adjustment, the subject's mother reported complete absence of tics, asthma, insomnia, hyperactivity, headaches, depression, and neck pain. When questioned, the patient also did not recall experiencing any neck pain, headaches, or asthma attacks.

Therefore, after six weeks of care, all six conditions had abated and all medications were discontinued with the exception of a half-dose of Wellbutrin. At the conclusion of his case at five months, all symptoms remained absent.

The author speculates, "It is possible that this patient sustained an injury to his upper cervical spine (visualized on cervical radiographs) either during one of the traumatic incidences his parents recalled or some other episode."

The onset of symptoms soon after the boy's delivery; the immediate reduction in symptoms correlating with the initiation of care; and the complete absence of symptoms within six weeks of care; suggest a link between the patient's traumatic birth, the upper cervical subluxation, and his neurological conditions.

Further investigation into upper cervical trauma as a contributing factor to Tourette Syndrome, ADHD, depression, insomnia, headaches, and asthma should be pursued.

Reference: Elster EL. Upper Cervical Chiropractic Care For A Nine-Year-Old Male With Tourette Syndrome, Attention Deficit Hyperactivity Disorder, Depression, Asthma, Insomnia, and Headaches: a case report. *JVSR* 2003;5:1-11.