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eBOOKCHAPTER

Introduction to Chiropractic Manipulative Reflex Technique (CMRT)

(Chapter 4)

Charles L Blum

Chapter 4 CMRT – Chiropractic Involvement in Nonmusculoskeletal Treatment

Visceral Segmental Innervation

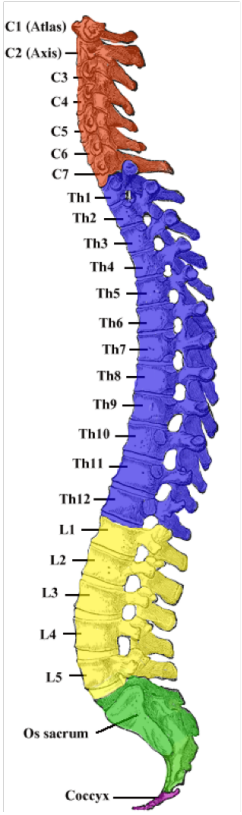
For many decades and longer there have been charts that attempt to suggest there is a segmental relationship between vertebral dysfunction (subluxation) and visceral disorders. Depending on whomever creates the chart, it is common to see different, specific organ-vertebral interrelationships.

Sato discussed how in animal experimental studies, "*both noxious and innocuous stimulation of somatic afferents have been shown to evoke reflex changes in sympathetic efferent activity*," ultimately affecting organ function, and "*may exhibit laterality and segmental tendencies*." (1) In an earlier animal study Sato found "*some [somatovisceral] responses have propriospinal and segmental characteristics, while others have supraspinal and generalized characteristics in their reflex nature*." (2) Conversely Nansel and Szlazak question any '*causal segmentally or regionally related "somato-visceral disease" relationship*.' (3)

While traditionally somatic or spinal nerve related radicular pain syndromes were believed to be segmental in nature, these also have been under question. Murphy et al note that, "*In most cases nerve root pain should not be expected to follow along a specific dermatome, and a dermatomal distribution of pain is not a useful historical factor in the diagnosis of radicular pain*." (4) '*Unlike radicular pain and neuropathic pain, referred pain is a less studied area*,' [5] and therefore, we also are not seeing this clear spinal segmental relationship as is often discussed and illustrated on many charts and within textbooks.

Gerwin's study into myofascial and visceral pain syndromes reveal that "*a regional pain referral from a visceral disorder can induce secondary [myofascial pain syndromes]. Visceral disorders induce central sensitization with hypersensitivity and expansion in the number and size of receptive fields. Central sensitization is topographically organized in the spinal cord, being segmentally predominant at the level of the affected viscera*." (6) In an earlier study by Feinstein et

al, they found that "*patterns of deep somatic pain referral were studied with paravertebral injections of six per cent saline solution from the occiput to the sacrum, five subjects being used for each intervertebral level. The distributions were found to approximate a segmental plan, although they overlapped considerably and differed in location from the conventional dermatomes*." (7)



C1	Head, Brain, Ears
C2	Eyes, Auditory Nerves, Sinuses
C3	Facial Bones, Teeth, Neuralgia
C4	Nose, Eustachian Tube, Adenoids
C5	Larynx, Vocal Cords
C6	Tonsils, Chronic Cough
C7	Thyroid
T1	Cardiac Syndromes
T2	Myocardial Syndromes
T3	Pulmonary Syndromes
T4	Gallbladder Syndromes
T5	Gastric Syndromes
T6	Pancreas Syndromes
T7	Spleen Syndromes
T8	Hepatic Syndromes
T9	Adrenal Syndromes
T10	Small Intestine Syndromes
T11	Renal Syndromes
T12	Renal Syndromes
L1	Ileocecal Syndromes
L2	Cecal Syndromes
L3	Sexual Glandular Syndromes
L4	Large Intestine Syndromes
L5	Prostate/Uterine Syndromes
Sacrum	Sacral Parasympathetics
Coccyx	Rectum, Anus

Graphic by Henry Vandyke Carter - Vertebral column image.- From: Henry Gray (1918) Anatomy of the Human Body (See "Book" section below)- Altered by User:Uwe Gille, Public Domain, https://commons.wikimedia.org/w/index.php?curid=1282158

Over 100 years ago, Winsor (8) performed a series of dissections on cadavers looking for any possible correlation between vertebra, sympathetic nerve segments, and diseased viscera/organs. Of interest "*… in 50 cadavers with disease in 139 organs, there was found minor curvatures of the spine, belonging to the same sympathetic segments as the diseased organs 128 times, leaving an apparent discrepancy of 10, in which the vertebrae in spinal curvature belonged to an adjacent segment to that which should supply the diseased organs with sympathetic filaments*." He determined that "Sympathetic disturbances are just as likely to cause functional or organic disease in viscera, by altering the blood-supply of viscera, through vaso-motor spasm." (8)

A review of Winsor's study by Murphy (9) suggests that:

1. Curvatures of the spine adversely affect the sympathetic nervous system.
2. The sympathetic nervous system controls the blood supply to the viscera, making it thereby related to all manner of visceral diseases and pathology, and specifically, "*the ordinary diseases of adult life*."
3. Visceral diseases and pathology can be traced back to the segmental levels of sympathetic involvement with nearly 100% correlation. (9)

Are researchers asking the right questions about chiropractic's involvement in nonmusculoskeletal patient presentations?

Much of the research into chiropractic treatment of nonmusculoskeletal conditions tends to focus on non-specific adjustment(s) to the spine somewhere in the region of the viscera being studied. There is a presumption that if chiropractic care will be effective in treatment of nonmusculoskeletal conditions, a non-specific vertebral manipulation should reliably improve visceral function. For instance, Picchiottino et al studied whether a general nonspecific thoracic spinal manipulation would have a reliable effect on cardiovascular autonomic activity by assessing '*heart rate and systolic blood pressure variabilities*.' (10) Not surprisingly, no reliable finding of a change in cardiovascular activity was demonstrated with this study.

Ideally, for any study we would want to find patients that appear to have a somatovisceral component by determining if they have a history of their cardiovascular system responding positively to a chiropractic adjustment (or something similar). We would want to determine with these patients if a spinal level mattered to the spinal manipulative intervention. The evidence does show that a subset of patients with nonmusculoskeletal presentations may be responsive to chiropractic care. (11-13) We do know that, for the general population, a general thrust to the thoracic spine would not be expected to have a reliable visceral response. This is why differentiating the intervention for this responsive subset of patients in a study is so crucial.

Similarly, Balon concluded in a study on the effect of chiropractic manipulative care on asthma (which, again, predominantly focused on a generalized thrust to the thoracic spine) that "*In children with mild or moderate asthma, the addition of chiropractic spinal manipulation to usual medical care provided no benefit.*" (14) The issue with the current evidence on chiropractic care into nonmusculoskeletal conditions centers around this: what questions are we asking when we are performing research? For example, what issues might we have with the Balon study as we look at its formulation and interpretation of its results? (15)

Rosner disputed Balon's study by noting that the conclusion "*is based upon the failure of active intervention and manipulation patient groups in a clinical trial to be differentiated in both measurements of quality of life (including nighttime symptoms) and airway function. However, 17 months earlier the same authors had already concluded that with the chiropractic intervention, nighttime symptoms had improved. There was a significant difference between the same two patient groups at the highly robust null probability level of p<0.001.*" (16) This discrepancy was not mentioned in Balon's study. (17)

Aside from the issue with the study by Balon (14) ignoring a previous study they performed that showed that chiropractic manipulation "*appears to help night- time symptom control . . .*", (17) Rosner points out four other questionable aspects of their study: (14)

1. There are questions regarding the sham procedure(s) used in their study. Rosner points out that, "*With over 20 commonly used techniques and 100 procedures overall described for chiropractic, there is understandably a great deal of controversy as to what constitutes a proper sham or mimic treatment*" (13). He continues "*The problem is compounded by the fact [in the Balon study] that nearly a dozen chiropractors had to be trained to perform" sham procedures "with no indication of standardization. The effect of all this is to minimize or obscure the therapeutic effect that might be observed in an actual adjustment*" (15, 18)
2. There were possible masking effects by medication in the study. "*The fact that all patients [had] been medicated may be necessary from an ethical point of view, but it would be expected to mask the beneficial effects that might have been observed from spinal manipulation. The reader must be cognizant of the fact that this trial reports little or no benefits in addition to standard medication.*" (15, 18)
3. Rosner questions, "*how eligible patients as young as seven years of age are to competently answer such questions as those pertaining to 'feeling at ease, the skill and the ability of the chiropractor, and overall quality of care' that were administered in the trial?*" (15, 18)
4. Finally, it was clear from the study that, with intervention, there was significant improvement "*as demonstrated by declines at 2 months and 4 months of both daytime symptom scores and the number of puffs per day of a beta-antagonist, in addition to small increases of peak expiratory flow rates and pediatric quality of life scores in both [global and/or manual] groups.*" (15, 18) "*What is not clear is which form(s) of intervention [global and/or manual] elicited responses. What is not shown by the data is that contact with the chiropractor fails to provide additional benefits in addition to medication in the management of childhood asthma.*" (15, 18)

5. Additionally, the sham procedure used in the Balon study was a generalized massage to the child's back. Research has repeatedly shown that massage helps childhood asthma, (19) so this intervention would be considered more of a comparative therapy than a placebo. Therefore, it would be inappropriate to say that because a generalized manipulation to the thoracic area was no different than the sham, that the chiropractic intervention was no different than a placebo.

It is important to understand that chiropractic researchers and academics view commonly that chiropractic care for "*MSK (musculoskeletal) and spinal pain, for which some evidence already exists, should be the priority of future research, building on what is known*." This is a reasonable approach when viewed from the lens of a chiropractic researcher or academic since it makes sense when performing research to limit variables and study phenomena in as reductionistic a manner as possible. In contrast, chiropractic clinical practitioners tend to favor "*that future research should be directed toward expanded areas such as basic science, younger populations, and non-MSK conditions*." (20)

When we look at a call for practitioner research partnerships, it appears that the researcher only sees a need for the involvement of practitioners in research in order "*to improve their use of research-based interventions, and thus the quality of care and client outcomes*." (21) What seems to be missing in the practitioner researcher partnership is an understanding of the value of a clinician's experience and familiarity in treating the various individuality and complexity of the N=1 patient. Chiropractors in practice know that chiropractic is more than spinal manipulation procedures and is rather a profession which operates based on a unique approach to health care, which is encompassed in the "Gestalt" of the chiropractic clinical encounter. (22)

So when we look at studies that attempt to reductionistically determine chiropractic's reliable affect on nonmusculoskeletal conditions, we need to look at how patients are selected, how the treatment is rendered, and what might be the bias of the researchers?

What do these types of studies have to do with CMRT? The issue is that CMRT uses a series of assessments, starting with occipital fiber/vertebral relationships, visceral referred pain patterns, clinical history, laboratory analysis, and other factors, to develop a treatment plan. Also, these studies tend to not understand that a non-specific spinal manipulation to the general population of patients would not be expected to yield a specific nonmusculoskeletal effect.

Ideally there is a balance when treating patients with nonmusculoskeletal presentations:

1. Is this patient a good candidate for CMRT? Do they have the various features suggesting that they fit the criteria such as positive occipital fiber vertebral relationship, visceral referred pain patterns, clinical finding congruent with visceral stressors, and any laboratory analysis noting possible visceral compromise?
2. When there is a degree of uncertainty, risk of treatment becomes part of the diagnostic equation. (23) With possible nonmusculoskeletal pathology co-managed care with an allopath will be crucial, however with subclinical visceral dysfunction sometimes treatment with CMRT can be part of the diagnostic process. If the patient shows any sign of improvement (e.g. reduction of symptoms, occipital fiber, vertebral sensitivity, visceral reflexes, etc.) after a reasonable trial of care (e.g., two weeks of treatment, treated twice a week), then this patient may be a good candidate to continue CMRT care.

When performing research, we need to make sure we are asking the correct questions. For instance, when performing a study investigating nonmusculoskeletal chiropractic care, we would want to have specific inclusion and exclusion criteria for the study design. These criteria might include:

- What patients might have some specific occipital fiber/vertebral relationships that are concurrent with their CMRT visceral referred pain patterns?
- What patients might have shown an unsuspected positive visceral response, possibly to a somatic intervention or chiropractic care?
- What patients might notice a worsening of their visceral or organ function with spinal imbalance or vertebral related subluxations?
- What patients might notice a relationship between physical and/or life/emotional stressors and visceral dysfunction?

Important future studies would need to investigate how to create an outcome assessment tool that might facilitate predicting what patients with nonmusculoskeletal presentations might best respond to chiropractic care. Until we start asking the right questions for the right subset of patients, we cannot reasonably expect to have answers for determining what group of patients might be good candidates for chiropractic nonmusculoskeletal care. The proper questions are important if we are ever going to successfully study the effectiveness of CMRT assessment and treatment protocols. At this point in time, given the low-risk nature of the chiropractic encounter, a short trial of CMRT would be appropriate, and if there is any flare up or concern of organ/visceral acute dysfunction or pathology, an immediate allopathic referral would be indicated. (24)

It is encouraging that emerging evidence is beginning to support "*the biological plausibility of complex benefits from chiropractic intervention that is not limited to simple neuromusculoskeletal outcomes and open new avenues for future research, specifically the exploration and mapping of the precise neural pathways and networks influenced by chiropractic adjustment.*" [25]

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About the author

Charles L Blum
DC, CSP, CSCP
Director of Research
Sacro Occipital Technique Organization - USA
Private practice of Chiropractic
Santa Monica, CA

Charles L Blum DC, CSCP is in private practice *Santa Monica, California* and past president of SOTO – USA, now their research chair. He serves as Adjunct research faculty at *Cleveland Chiropractic College* and associate faculty at *Southern California University of Health Sciences* teaching the SOT Elective. Dr. Blum is a Certified SOT Cranial Practitioner, and on the peer review board of the *Journal of Craniomandibular and Sleep Practice* (CRANIO), *Association of Chiropractic College Conference Peer Review Committee*, *Journal of Contemporary Chiropractic*, *Asia Pacific Chiropractic Journal*, and *Journal of Chiropractic Medicine*. He has lectured nationally and internationally, has written various SOT related texts, compiled SOT and cranial related research, and has extensively published in multiple peer reviewed indexed journals and at research conferences from 1984 to the present.