ADJUSTING THE CERVICAL SPINE AND ITS EFFECT ON LOW BACK PAIN

REVIEW OF THE LITERATURE

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ABSTRACT

The purpose of this paper is to review the literature, which pertains to the hypothesis of cervical subluxations and their influence on low back pain. Many practitioners use exclusively an upper cervical technique and remain successful caring for patients with low back pain. There are several believes as to why cervical subluxations are related to low back pain. A further objective will be to determine which orthopedic tests, if any, can be used as a predictor of positive outcome. In this paper there will also be a compilation of case studies from the Sid E. Williams Research Center. These records will demonstrate reduction of upper cervical structural misalignments and reduction of positive orthopedic tests on post examination. The techniques utilized on the patients from the research center were Grostic or Sweat analysis and either the Life Cervical or Laney instrument to adjust the OAASC, (occipito-atlanto-axial subluxation complex), by using atlas as a lever. Of these case studies one significant factor discovered was a history of head trauma in 28 of 45 patients. Chiropractic interns reduced the subluxation an average of 59.3%. Although significant overall reduction of positive orthopedic tests was observed, the most dramatic results were seen in those tests indicative of neurological involvement in the low back region.

INTRODUCTION

Back pain has burdened Americans with pain so severe that it has interfered with their ability to perform normal daily activities, such as sitting or standing for extended periods of time. Of all back problems, low back pain is the most common. In the United

States alone, seven million people are temporarily discharged from work at one time due to low back pain.[1]

The pursuit for pain relief has led people to medical doctors and osteopaths. Under the care of these physicians, patients receive treatments involving drugs, surgery, massage, manipulation, physical therapy or combinations of the above mentioned. Patients who become discouraged with the results of such health care tactics continue their search for pain alleviation. Often, as a last result, these same patients turn to chiropractic care, a natural way to health based on the biological theory of homeostasis. Chiropractors assist in the correction of nervous system interference by adjusting specific segments of the spinal column, thus restoring joint motion, biomechanical, and nervous system function. Just until recently chiropractors have been scorned as "quacks," but more recently, with continuing success, this profession is becoming more accepted.[2]

Can chiropractic adjustments of the cervical spine alone be effective in caring for patients with low back pain? Many different techniques such as Toggle Recoil, NUCCA, Grostic, HIO, and Sweat analysis use primarily upper cervical adjustments and maintain successful results with low back pain patients. There are several case studies that demonstrate low back pain alleviation by adjusting only the atlas.[3,4] Hoiriis presents a case with the patient complaining of low back pain radiating into the right lower extremity. This patient had sought medical care and received a laminectomy of L4, L5, and S1, and also a partial L4-5 and L5-S1 diskectomy. Years after the surgery, without relief of pain, this patient resorted to chiropractic care. The patient was given upper cervical adjustments determined by Life College upper cervical x-ray analysis technique. As care progressed, the patients pain decreased dramatically and the range of motion

gradually increased.[5] Another case of low back pain related to cervical subluxations is reported by Clarkson. A 63 year old man complaining of low back pain so severe it had interfered with his ability to sleep well for ten years. At the end of four upper cervical adjustments his pain had totally subsided.[6]

LEG LENGTHS

How can it be that rotating your head to either side, as in testing for a cervical subluxation syndrome, possibly change the leg lengths? If the cervicals can effect the lower extremities by head rotation in such a way, it may also be possible for cervical subluxations to cause pelvic distortions and eventually low back pain. It has been demonstrated that it is possible to correct the leg length inequality by adjusting the atlas.[7] The investigator also demonstrates that atlas laterality, measured from x-ray, can effect pelvic distortions. As the atlas laterality is adjusted and reduced, the pelvic distortions in the frontal plane are also reduced. In this study 355 patients were adjusted for atlas laterality, all 355 showed a reduction in pelvic distortion in the frontal plane as well as a reduction in atlas laterality. This work also demonstrated atlas rotation and its effect on pelvic distortions in the transverse plane. Of 355 patients adjusted for atlas rotation, 349 showed improvements with pelvic distortion in the transverse plane.[8]

GROSTIC

Grostic has proposed the Dentate Ligament-Cord Distortion Hypothesis for explaining why upper cervical subluxations can cause low back pain symptoms. Given the following three principles:

1. The dentate ligaments are attached to the osseous structures of the upper cervical spine and the cord;
2. The dentate ligaments are strong enough to distort the cord;
3. The osseous misalignments are large enough to irritate the cord.

Grostic also suggests that, "misalignments of the upper cervical vertebra, because of their unique attachment to the spinal cord by means of the dentate ligaments can directly stress and deform the spinal cord."[8] The spinothalamic tract lies close to the attachment points for the dentate ligaments, which correspond to the lower lumbar and sacral nerve distributions carrying sensations of pain and temperature. Thus, based on the above theory, irritation of the spinothalmic tract by upper cervical subluxations may cause low back pain. A study Torkildsen, suggests that cervical lesions can present as sciatic like symptoms. He indicates that this pain can be caused by osteophytes, spondylosis, or discal lesions causing nerve root compression on mid to lower cervical vertebra, he is able to relieve low back pain symptoms.[9] Proprioceptors in the muscles, tendons, ligaments, and joint capsules at various points in the body maintain muscular

tonus and equilibrium.[10] "By far the most important proprioceptive information needed for the maintenance of equilibrium is that derived from the joint receptors of the neck."[11] Some investigators suggest that a disturbance in neck proprioceptors can cause compensation down the spine which give rise to muscular imbalance leading to low back pain.[10,12]

PIERCE

Pierce theorizes that pelvic misalignments and low back pain can be affected by adjusting only cervical spine. Pierce utilizes what he refers to as the "perfect pelvis" in order to determine when to adjust the cervicals or the pelvis. His criteria, taken from and A-P pelvic x-ray, for the perfect pelvis are:

1. The pubic articulation must be centrally aligned with the sacrum;
2. When the pelvis is vertically divided in halves, one half can be placed over the other with equal symmetry.

When this pelvic criteria is met, Pierce claims that the low back pain problem is of cervical nature most of the time. If the low back pain is not remedied by adjusting only the cervical spine, then the pelvis must also be adjusted.[13]

CASE STUDIES (RESEARCH CENTER)

The records of 45 patients previously seen by student interns at the Sid E. Williams Research Center were pulled from the archives. These records were selected for meeting the following criteria: chronic low back pain lasting longer than one year as chief complaint, upper cervical adjustments only, pre and post x-ray, and orthopedic examination conducted initially and at discharge. Patient information such as sex, age, length of care, history of trauma, orthopedic exam results, and type of analysis and adjustment was stored in a spreadsheet computer program that allowed manipulation of data.

All measurements collected were in degrees. It should be noted that analysis was done by Grostic or Sweat upper cervical analysis methods.[14,15,16,17,18] The patients radiographs, once analyzed, allowed the intern to calculate vector coordinates that would allow for the best reduction of the OAASC (occipto-atlanto-axial subluxation complex). Orthopedic, neurological, and chiropractic examinations were done on each patient prior to the first adjustment. Life College clinic guidelines were used as criterion for which tests were performed on the patient. Patients were also re-examined at or near their discharge from the research department.

Results

The records of 45 patients, who had chiropractic care for an average of 191 days, were studied. Eighteen patients were male and 27 patients were female with an average age of 41.86 years old. All patients complained of chronic low back pain with duration of a year or more as their chief complaint. The most common pain distributions were in

the lumbo-sacral area as reported by 24 of the 45 patients. Nine patients reported pain in the sacro-illiac region while 5 reported pain in the thoraco-lumbar region and 5 reported pain only in the lumbar area. The sacral area and the thoracic area each had one patient reporting pain and one patient had pain as a result of a spondylothisthesis.

Atlas laterality was an average of 2.3 degrees with 21 patients listing on the left. Post adjustment radiographs showed laterality reduced 67.8% to an average of 0.9 degrees. Rotation was reduced, from an average of 2.4 degrees before adjusting C1, to 1.6 degrees on post x-ray. This was an average reduction of 29.3%. Twenty-four patients listed anterior rotation, 18 listed posterior, and 3 listed 0 rotation or normal. The final misalignment factor considered was atlas plane line deviation from horizontal. Pre adjustment patients showed an average of 2.5 degrees deviation and post adjustment patients showed an average of 0.8 degrees or a 66.6% reduction. Thirty-six patients had deviation above the horizontal while 5 patients were below horizontal and 4 were unreported. The above factors, when added and averaged, showed that the interns achieved an overall reduction of 59.3%.

Twenty-two standard orthopedic / neurological were selected for study. These tests are performed on each patient entering any of Life College's clinics. Of the 22 tests, 17 are tested bilaterally making a total of 39 possible positive responses. Only 4 tests are designed to demonstrate upper-cervical involvement whereas 14 tests are related to lumbar, sacro-illiac, or hip involvement. The 45 patients presented with an average of 8.22 positive tests. At the time of their final re-exam, the average number of positive tests had been reduced by almost half, or 4.42 per patient. Significant reduction in major cervical involvement indicators such as Jackson's Compression Test and the Shoulder

Depressor Test were in the 60% range. Kemp's Test, a major indicator for low back neurological involvement, proved to be a positive indicator 44 times on initial examination. Prior to discharge only 7 positive tests were observed with 2 patients still reporting positive tests bilaterally. Other tests such as Advancement and Yoeman's, also indicative of low back neurological involvement were reduced in a range of 50% to 70%.

An interesting discovery was made while reviewing the patient history of 40 of the 45 patient files. Of those 40 reporting a history of physical insult, 17 patients listed their first (oldest) injury as head trauma and 28 patients total listed a head trauma injury. As this was a retrospective study, patients could not be questioned regarding birth trauma; a significant factor in cervicolumbar syndrome.[19] Four patients could recall a specific low back injury and three patients recalled falls without head trauma. Other insults noted were surgical procedures and extremity fractures.

CONCLUSION

After reviewing the literature on this topic, it has been found that there are many theories and case studies to support the hypothesis that cervical subluxations are related to the cause of low back pain. As mentioned above from Grostic's theory he talks about dentate ligaments being the main contributing factor for low back pain. Pierce talked about the "perfect pelvis" and if that is balanced out any other low back pain is caused by the cervical spine. Both doctors as well as many other techniques have value to them in helping low back pain. All techniques have a system of analysis for the upper cervical spine, whether you adjust it with an instrument or with your hands. They all know the value of specifically assessing the upper cervical spine for subluxations so that the

superior congestion is cleared out before any other inferior subluxations are cleared out. However, to this date there have been no specific, random, or controlled studies to confirm this hypothesis.

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