A Retrospective Study: Patients with Chronic Low Back Pain Managed with Specific Upper Cervical Adjustments

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ABSTRACT

This paper reviews the correlation between changes in chronic low back pain and the reduction of the occipito-atlanto-axial subluxation complex, hereby referred to as the OAASC. A further objective will be to determine which orthopedic tests, if any, can be used as a predictor of positive patient outcome. The records, of patients who presented to the Sid E. Williams Research Center with chronic low back pain, were pulled from the archives and reviewed. These records demonstrate reduction of upper cervical structural misalignments and reduction of upper cervical structural misalignments and reduction of positive orthopedic tests on post examination. Management of these patients was strictly through upper cervical techniques utilizing Grostic or Sweat analysis and either the Life Cervical or Laney instrument to adjust the OAASC by using atlas as a lever. 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.

MATERIALS AND METHODS

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 treatment, history of trauma, orthopedic exam results, and type of analysis and adjustment was stored in a spreadsheet computer program that allowed manipulation of the data.

Lateral, nasium, and vertex cervical radiographs previously analyzed by student interns were examined. Data recorded regarding atlas lateral deviation with respect to the skull, were taken from the angle formed by a central skull line and the transverse plane line of atlas as seen on the nasium view. Rotation malposition between atlas and the occipital condyles was determined by measuring the angle formed by a mid-foraminal line of the atlas and a center skull line drawn on the vertex film. Transverse plane line deviation from the horizontal was taken from the nasium view.

All measurements collected were in degrees. It should be noted that analysis was done by Grostic or Sweat upper cervical analysis methods.[6,7,11,12,13] Incorrect or improper analysis previously done by students was corrected using Grostic analysis.[6,7,10,14,15] The patient's radiographs, once analyzed, allowed the intern to calculate vector coordinates that would allow for the best reduction of the OAASC. After the first adjustment, a radiographic study consisting of a nasium and vertex views was taken. These views were analyzed in the same manner as the pre-adjustment views and the misalignment factors and reduction percentages were recorded.

Subsequent visits and examinations were determined by the clinic review committee doctor supervising the intern. Readjustment was made when the patient exhibited evidence of an upper-cervical subluxation as demonstrated by spinal muscle tone asymmetry (supine leg length test).[6,16] This test was also used as an indicator of probable misalignment reduction. The supine leg length test may or may not have been used in coordination with a single probe infrared temperature scanning device.

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. Positive findings were scored in the following manner: a positive Jackson's compression on the right was scored as 1 positive, while a positive Jackson's bilaterally was scored as 2 positives.[17,18]

RESULTS

The records of 45 patients, treated for an average of 191 days, were studied. Eighteen patients were male and 27 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 distribution was in the lumbo-sacral area as reported by 24 of the 45 patients. Nine patients reported pain in the sacro-iliac 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 spondylolisthesis [Figure 1].

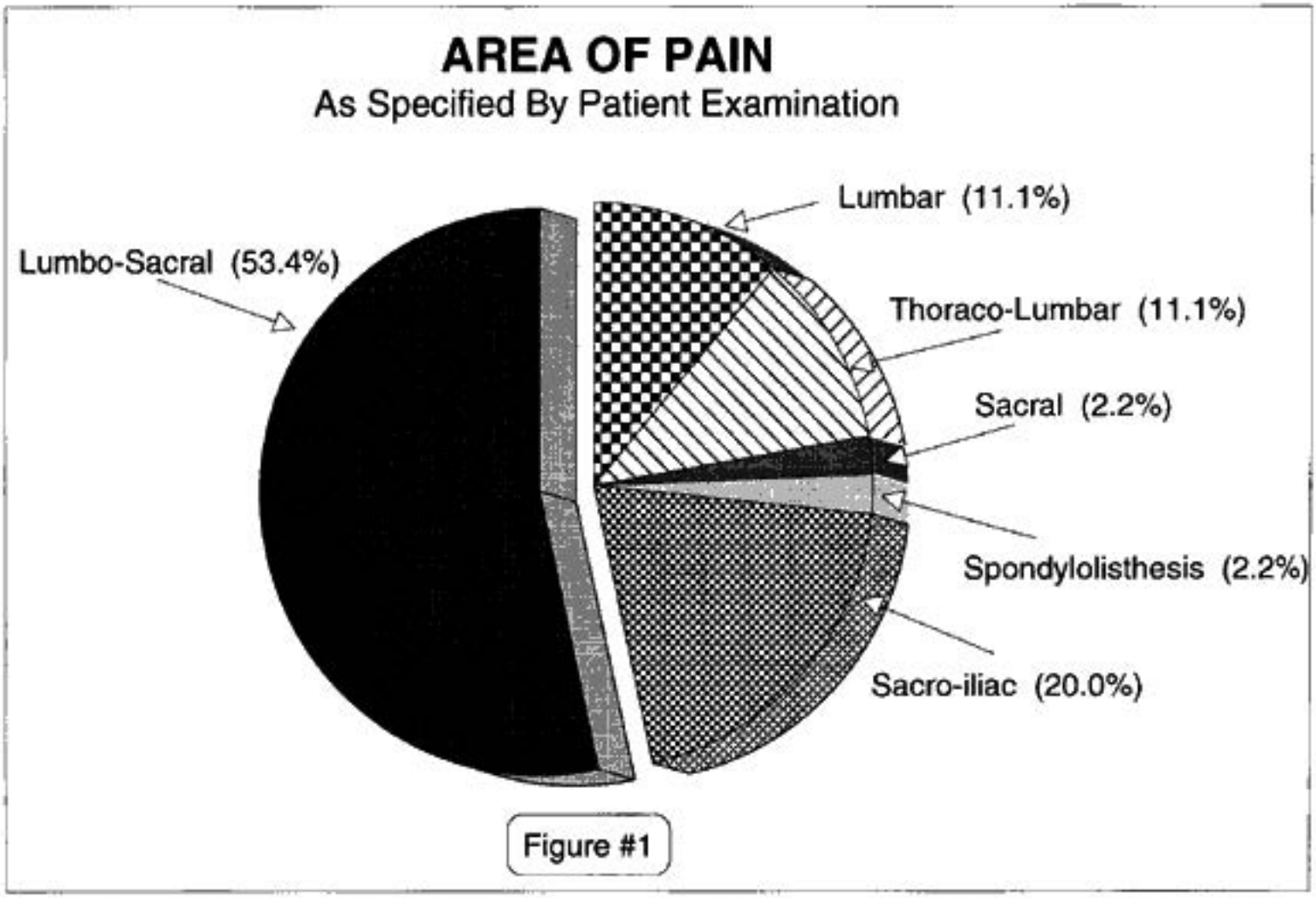

Figure #1

Atlas laterality was an average of 2.3 degrees with 21 patients listing on the right and 24 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% [Figure 2].

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, sacroiliac, or hip involvement. The 4 tests remaining are for other areas. 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

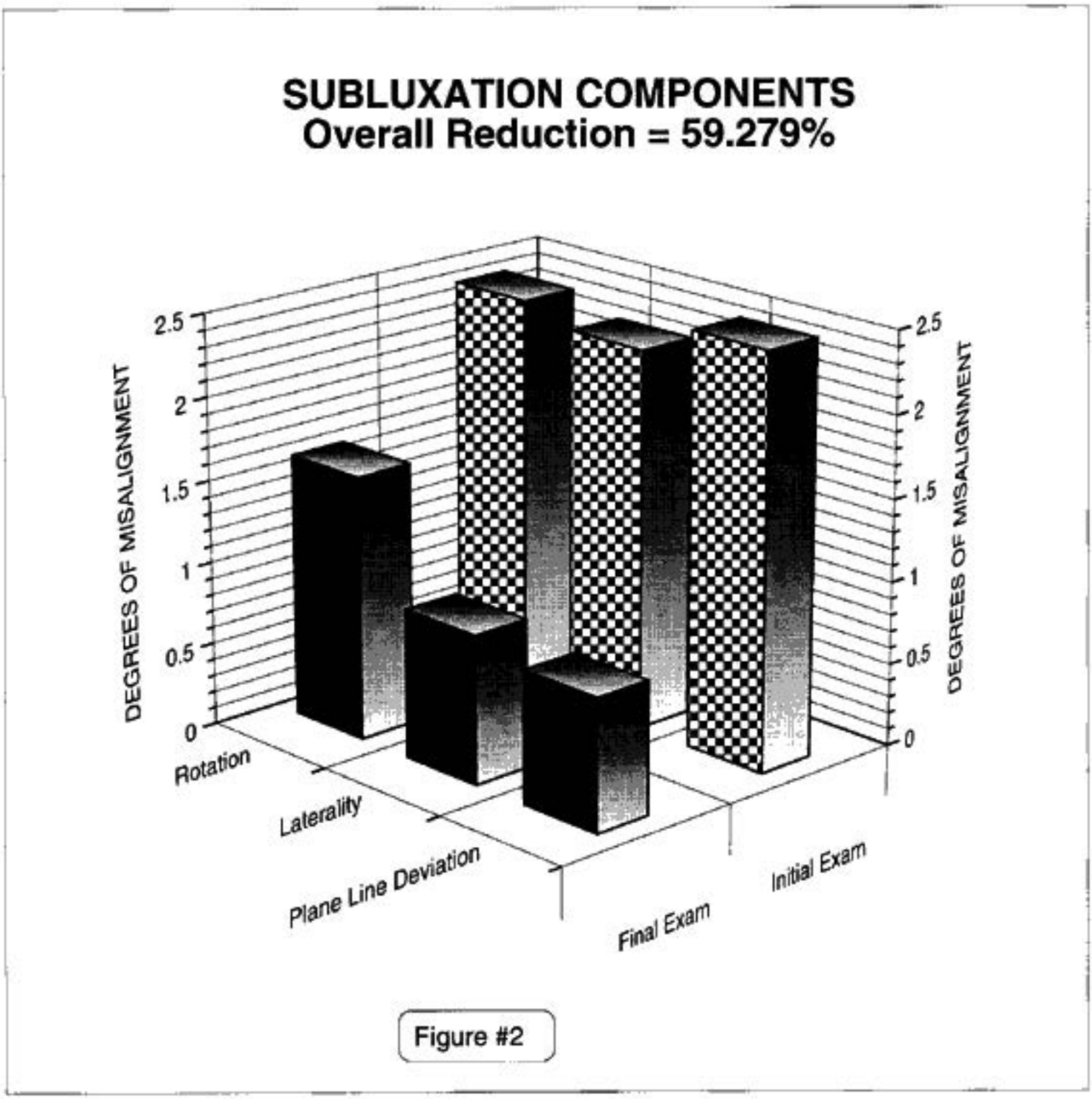

Figure #2

with 2 patients still reporting positive tests bilaterally. Other tests such as Advancement and Yoeman's, also indicative of low back neurological involvement, were reduce in a range of 50% to 70% [Figure 3].

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.[2] Four patients could recall a specific low back injury and three patients recalled falls without specific head trauma. Other insults noted were surgical procedures and extremity fractures.

ORTHOPAEDIC TESTS

Tests for 45 Patients

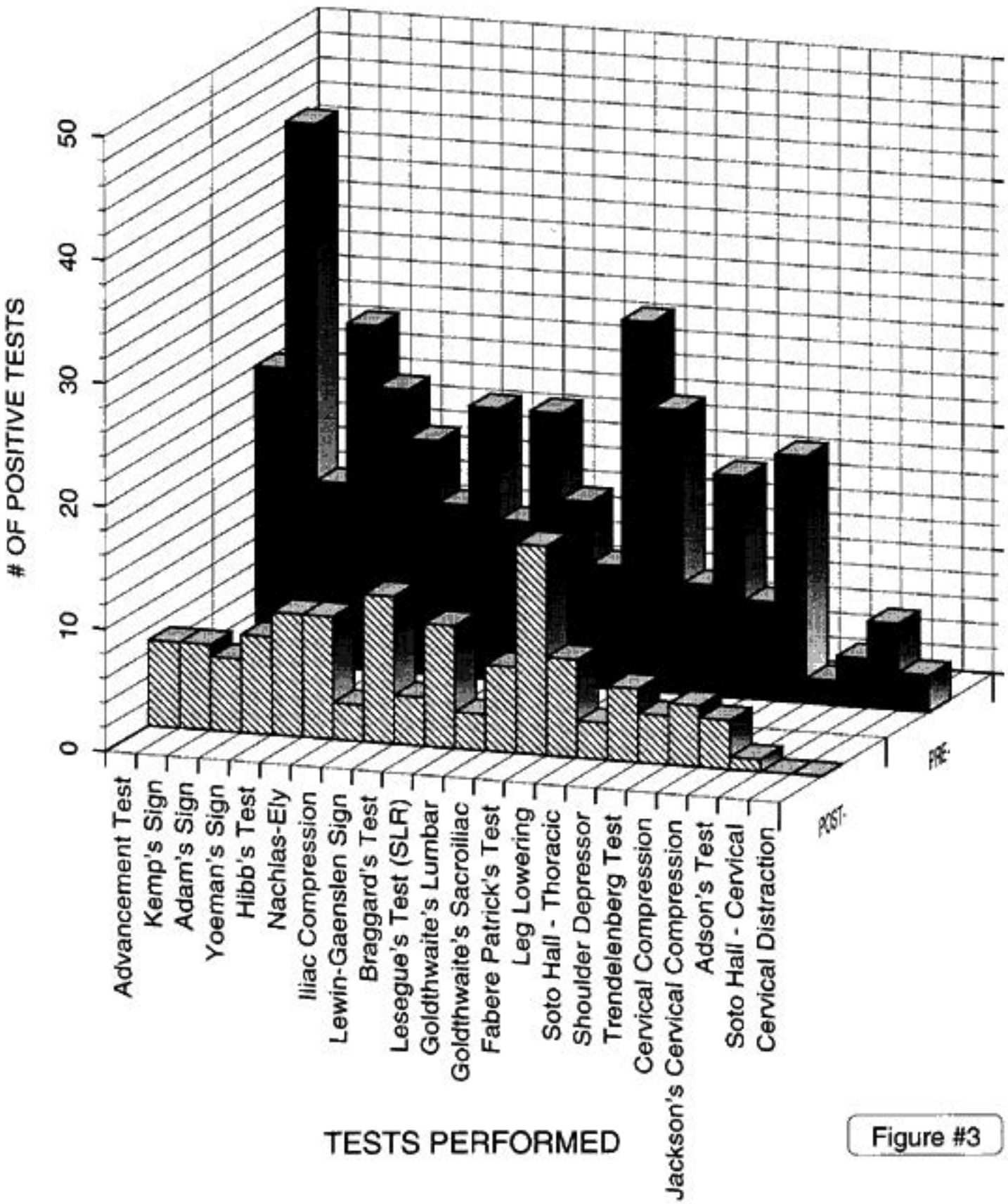

Figure #3

DISCUSSION

A survey done at Life College showed approximately 50% of the patients presenting to their clinics complained of low back pain.[19]

According to Garron and Leavitt,[20] low back pain is a common symptom and is frequently both chronic and chronically disabling. It is often associated with a variety of pain syndromes, neurologic and orthopedic disorders, psychological disturbances, and organic disease.[20] The spine is, however, an organ of the body and not separate segments to be divided. Soft tissue changes and incorrect proprioception can be detected along the whole spine even though pain, restricted motion, or muscle spasm may be localized.[1,2]

Grostic, et. al. maintains that the upper cervical spine is unique in that vertebral misalignments at this level may affect the spinal cord by direct mechanical irritation. Such irritation may affect nerve impulse transmission in the spinothalamic and spinocerebellar tracts leading to perception of low back pain and hypertonicity (spasm) of low back muscles respectively." [19] The two most significant explanations for the mechanism of low back pain caused by upper cervical subluxation are Homewood's proprioceptive insult hypothesis and Grostic's dentate ligament - cord distortion hypothesis.[3,21] The latter mechanism is more testable in that upper cervical misalignments can be translated into mechanical and vascular irritation of the spinal cord. Although it is not currently possible to detect direct pressure on the cord, areas of maximal stress from rotation and laterality of atlas with respect to the occipital condyles and axis can be measured. By reducing the osseous misalignments of the upper cervical spine, stress on the spinal cord can be reduced and thereby affect improvement in low back pain and hypertonicity of the musculature. Once cord level stress is removed, correct proprioception, increased joint play, and self-healing make for pronounced improvement of neurological and orthopedic signs.[2,19] A history of head trauma does not predispose a patient to chronic low back pain nor should it be considered as an indicator of cord level stress. It is, however, a good indicator of possible upper cervical misalignment corresponding to patients with chronic low back pain. By utilizing a specific upper cervical approach to the chronic low back pain patient, the doctor can look for a reduction in positive orthopedic and neurological signs as an indicator for expected improvement in low back pain as well as reduction in cord level stress.[2,5,22,23]

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