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Paraspinal EMG Scanning: A Viable Technology for Chiropractic

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The recent August 29, 1990 issue of Dynamic Chiropractic contained the article "The Well-Managed Chiropractic Soft Tissue Injury" by Drs. Stahl and Foreman. This article contains remarks which could cause a reader to believe that paraspinal surface EMG is not a scientifically sound procedure. It is further claimed that the authors have never seen a case where paraspinal EMG findings have altered the type of care rendered to patients.

We feel compelled to respond to these misconceptions. No references were supported by Drs. Stahl and Foreman to support their position. Further, the authors admittedly have never encountered an instance where the technology was used properly. We suggest that readers consider the following:

1. Paraspinal EMG scanning is a reliable technique. Komi and Buskirk found that the test/retest reliability of surface electrode EMG was superior to that of inserted electrode technique. The average test/restest reliability for surface electrodes was 0.88, compared to 0.62 for inserted electrode EMG.[1] Cram reported a mean reliability coefficient of 0.83 for surface EMG scanning.[2] Spector conducted a study to determine the reliability of paraspinal surface EMG at New York Chiropractic College. Results of the study yielded correlation coefficients ranging between 0.73 and 0.97.[3] Thompson et al. of the Mayo Clinic found EMG scanning technique correlates highly with attached electrode technique.[4] In summary, the reliability of surface EMG has been documented in studies conducted with New York Chiropractic College, the Mayo Clinic, and the University of California-Irvine. A cooperative research program is currently underway at the University of the Pacific-Stockton and Palmer College of Chiropractic-West. Few analytical techniques in chiropractic display such a high level of reliability.

2. The technique is completely non-invasive. There is no piercing of the skin. No electrical signal of any kind is introduced into the body. The instrument simply measures the muscular activity that is present in the patient. There are no known contraindications to performing the study.

3. The technique is directly applicable to the practice of chiropractic. Abnormal paraspinal muscle activity has traditionally been used to detect and characterize vertebral subluxations. Spinal palpation seeks to locate "taut and tender" fibers associated with areas of subluxation. Paraspinal EMG scanning eliminates the subjectivity inherent in palpation. Paraspinal EMG scans, taken in concert with other examination findings, assist the chiropractor in determining:

a. Areas of possible subluxation.
b. Areas of muscle splinting.
c. Severity of the condition.

d. Degree of asymmetry of paraspinal muscle contraction.[5,6,7,8]

4. Chiropractic adjustments alter paraspinal EMG readings. Chiropractors have often observed dramatic palpatory changes in paraspinal muscles pre- and post-adjustment. Shambaugh conducted a study where surface electrodes were used to measure paraspinal EMG activity before and after chiropractic adjustment. This study was reported in JMPT, a refereed, peer-reviewed journal. Shambaugh concluded: "Results of this study show that significant changes in muscle electrical activity occur as a consequence of adjusting."[9] Similar findings were reported in a study conducted by the osteopathic profession. Ellestad et al. found that paraspinal EMG activity decreased in patients following osteopathic manipulation. Similar changes did not take place in controls.[10]

5. The technique has been accepted by courts of law. In their text Proving Medical Diagnosis and Prognosis, Houts and Marmor state, "Properly used, the EMG scanning technique is far more persuasive in the courtroom than is a report of needle EMG. ... You can present the jury with mathematical, tangible, physical evidence which they can see."[11] A memorandum in support of admission of EMG muscle scans filed in Superior Court, state of Washington, county of Spokane stated, "There is no legal basis for the exclusion of the EMG muscle scan when a proper foundation is laid for the introduction of such scientifically accepted testing. EMGs have been used for many years. Muscle scan testing has been admitted in numerous courts, including this court."[12]

6. The technique has been employed under the aegis of accredited chiropractic colleges. Dr. Kent has personally taught the technique in the regular curriculum of Palmer College of Chiropractic-West, and at the postgraduate level for Texas Chiropractic College.

7. The solution to overcharging is not exclusion. Drs. Stahl and Foreman cite an instance where an excessive fee was charged for a paraspinal EMG scan. Overcharging can occur with any chiropractic procedure. Are we to give up x-ray if an occasional doctor overcharges or overutilizes this technology?

We believe that paraspinal EMG scanning falls within the scope of chiropractic for the following reasons:

1. It has been documented in studies conducted by universities, hospitals, and chiropractic colleges. It is a well established procedure in the healing arts. According to Jeffrey Cram, Ph.D., who developed the technique of EMG scanning, surface EMG scanning is currently utilized in 80 percent of the pain clinics in the United States.[13]

2. It is completely non-invasive.

3. The technique is useful as an aid in detecting and characterizing vertebral subluxations.

4. EMG scans may be used to determine patient response to chiropractic care.

5. The technique has been taught in accredited chiropractic colleges.

6. EMG data have been accepted in courts of law, including cases in Washington state.

7. The technique is well-documented in chiropractic literature, including chiropractic trade publications and refereed journals.

8. The most vocal critics of the technique are those who have no formal training in the procedure, have not utilized it in clinical practice, and have not documented their disparaging remarks with references.

We feel confident that upon reviewing this information you will concur with Dr. Spector who stated that surface electrode paraspinal electromyography is a "... potentially powerful but currently underutilized technology ..." in chiropractic practice.

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