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ANALYZING THE OSTEOPATHIC LESION

To the osteopathic physician the osteopathic lesion is a demonstrable entity. He perceives it with his sense of touch and often with his muscle sense as he moves the parts, just as the surgeon palpates a tumor or the clinical pathologist sees the tubercle bacillus. There is, however, a difference. The surgeon can excise the tumor, examine it under the microscope and augment his palpation findings. The clinical pathologist can inject the tubercle bacillus into animals and cause the disease. With the exception of a few instances in which x-ray may be used, the osteopathic physician has no medium to verify his palpation findings. This results, unfortunately, in the fact that the recognition of an osteopathic lesion is a personal finding of an osteopathic physician which can be duplicated or further demonstrated only by the palpation of another osteopathic physician. Because of this the osteopathic lesion cannot be demonstrated to the impartial and unbiased scientist who lacks the specialized training of his tactile and muscle senses, or to the physician who has been differently trained.

Because of limited available knowledge about the physiology of living organisms, the surgeon often is unable to follow the exact pattern of symptoms arising from the tumor, or the clinical pathologist to determine with absolute accuracy why one patient recovers, and one dies, from tuberculosis. But they have devised means of checking diagnosis, and of checking the progress of the patient, that are factual and do not depend solely on either the opinion of the patient or the special senses of the doctor. They have found ways of securing evidence and evidence leads to proof.

In our profession we have attempted to prove the existence of the lesion by advancing theories as to the manner in which it affects the functions of the body. While this may be of value in our own thinking, there are two reasons why it cannot prove the existence of the osteopathic lesion. First, theory is a principle offered to *explain* phenomena, and second, there are so many obscure sections in our understanding of physiology (such as the mechanism

of referred pain) that in the light of present knowledge at least, there are too many gaps in our theories.

A more logical approach to demonstration and further study of the osteopathic lesion would be to find ways of identifying it other than by palpation. There are two avenues which might be employed—neither involves prohibitive technical difficulties. The first is an analysis of the exact temperature of normal and of lesioned areas by a sensitive thermocouple, and the second is a determination of the state of contraction of normal and lesioned muscles by the presence or absence of muscle action currents.

A thermocouple is an extremely sensitive device for measuring slight changes in temperature. It involves the use of an electrical circuit in which there is a contact of two or more metallic substances. When the junction of these substances undergoes a change in temperature, an electric current, which may be amplified and recorded, is generated. The junction of the metallic substances when the thermocouple is used in biological studies is in a needle which may be inserted into the tissue being studied.

One of the characteristics of muscle contraction is the presence of an accompanying discharge of electricity. This is called the muscle action current. As a large group (estimated at from one hundred to several hundred) of muscle fibers are supplied by one motor neurone and act simultaneously, each group being designated as a motor unit, a current large enough to be measured easily is generated.

The apparatus commonly used to detect and record bio-electric action currents is a high gain amplifier, a sensitive galvanometer or oscillograph and a recording instrument of some type.

An analysis of the temperature changes, and of the action current changes, neither would yield an explanation of how an osteopathic lesion disturbs physiology, nor demonstrate all of the chemical or physical changes in the lesioned area. It would, however, give evidence which is factual in character about the difference between normal tissue and tissue which is in lesion.

It is generally agreed that muscle contraction or muscle spasm involves changes in the chemistry of the muscle. It is estimated that of the energy generated by chemical changes in the muscle, about 20 per cent is converted into mechanical work while 80 per cent produces heat. If there is a chemical change in an area of lesion it must be accompanied by a temperature change. This temperature change can be evaluated and recorded with a thermocouple.

Equipment to study muscle action currents has been set up in the research laboratory of at least one of our colleges for about one year. The first report from this laboratory deals with the varying grades of muscle contraction when the patient assumes different positions. This is actually a by-product of the fundamental research. It is being reported first as it is of significance and as it is a small but complete experiment in itself. The first year of this work was spent in developing equipment and technic and in evaluating the various findings that have been

made. The latter has required considerable time as the scientific literature has yielded very little precedent in the form of previous similar experiments. While much work has been done in a study of nerve and muscle action currents, it has been on the basis of those currents which result from artificial stimulation. The analysis of action currents in normal and lesioned tissues must be made with the patient at rest, relaxed as completely as possible.

This laboratory has produced evidence* which demonstrates that when a patient is lying prone and relaxed on a table with his head turned to one side, the spinal musculature on the side to which the head is turned is in a state of partial contraction. The opposite side is relaxed. This is a small but surely not an insignificant finding. It has practical value in giving us a better knowledge of how to position our patients while administering manipulative treatment. Further than this it points the way to a method of analysis of skeletal musculature which promises to augment our knowledge of both pathology and pathological physiology in this type of tissue.

It takes but a glance through orthopedic periodicals to see an active and enthusiastic interest in manipulative therapy. Behind this is a greater accumulation of factual data than has been tabulated by our profession. There is a possibility that the next step will be for the leadership in manipulation to shift toward the small but able and active group of orthopedic, or as they call themselves, "manipulative" surgeons.

There is only one way to regain our full and unchallenged leadership. That is by securing more authentic factual information about the pathology with which we are dealing, and the effect of our therapy in its treatment. There is no question but that the use of the two approaches that have been mentioned, a study in normal and in lesioned tissue of temperature changes, with the thermocouple, and an analysis of electrical characteristics, with the oscillograph, will prove to be of value. Instruments of this type are common in any physiology department. A little time and a little money is all that is required for any one or any group of our people to initiate and carry through similar work of this character. An osteopathic physician in an eastern city stimulated the interest of a physiologist in the local university. They started a small project. It was terminated when the physiologist resigned from that school. But what was started can be finished not in one but in many laboratories.

J. S. DENSLOW, D.O.

"My first year of practice has presented problems . . . However, let it not be said that a graduate is unprepared to meet the usual problems of practice. The secret, if any, might be to 'use your best judgment' . . . In a small town practice such as mine (pop. 480), out of touch with suitable consultation, it is necessary to keep abreast with modern treatments. One of my largest sources of material is the A.O.A. JOURNAL and its other publications. Keep up the good work!"—From an A.O.A. member.

*This paper is being prepared for publication.

Editor's note

The pages appearing in this "Special reprints" section have been electronically scanned from the original journals in which they appeared. Consequently, the scanning process at a density to enhance readability has picked up such artifacts as "bleed-through" type from reverse pages and other "blemishes" that existed in the original paper on which the text was printed. Even the yellowing of the original pages has caused some darkening of the margins. JAOA regrets these anomalies and hopes that readers will overlook them and concentrate on the content of these works published in the osteopathic medical profession's early history.

For interest sake, concluding pages of articles may contain "newsy" items of the original date.

Gilbert E. D'Alonzo, DO
February 2001