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

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Soft Tissues in Areas of Osteopathic Lesion

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The discovery and development of osteopathy, like many useful clinical methods, required first, the logical assumption that under certain circumstances certain biological characteristics should exist (in this case a realization that mechanical structure is related to function) and, second, the observation that characteristic palpable changes in mechanical structures apparently accompany and influence functional and organic disease.

This paper deals with the examination and analysis of the palpable changes, in areas of osteopathic lesion, which occur in the overlying and supporting tissues of joints, which affect the positional and motion characteristics of joints, and which are used for the purpose of reaching a diagnosis and an outline of therapy.

In approaching this subject it is wise to recognize, at the outset, certain facts which have a direct bearing on these changes. Most important of these is that the joint changes which Still described originally are recognized and used daily by osteopathic physicians and, to a limited degree, by a few nonosteopathic physicians. Next is the fact that the joint changes under discussion are exceedingly complex and to date have largely defied classification and precise measurement; and finally, that although there has been considerable speculation, the actual mechanics of the relationship between these joint changes and clinical symptoms and disease are not known.

The reason that tissue changes are of great importance is because they indicate the location, extent, severity, and progress of malfunctions which involve not only the joints to which they are attached but other organs and tissues as well. These changes apparently involve the skin, subcutaneous tissues, fascia, muscle, and the attachment of muscle and fibrous elements to periosteum and to bone. They may be either functional or organic, or both in lesion areas of some duration.

The evidence that these changes are functional lies in the fact that they may be altered within short periods; it is secured subjectively by patients’ comments and objectively by palpation findings. When these changes are alleviated by therapy patients report decreases in pain or discomfort, greater ease of movement, increase in the sense of well-being, etc. While technics and methods for quantitizing such observations are still not satisfactory this lack does not invalidate the fact that patients report improvement concurrent with decreases in soft tissue abnormality.

Objectively, careful palpation reveals marked changes in tissue texture in either the direction of improvement or of regression to greater abnormality. The latter is dramatically illustrated by the increase in extent and degree of tissue abnormality which occurs in unsuccessful attempts to use the heel lift therapy. In a matter of a few hours after a change in weight-bearing stresses has been produced by a lift the tissue abnormality may become more severe and may extend over a greater area; at the same time the patient reports an exacerbation of symptoms. Although such palpation findings are, of course, subject to the interpretation and evaluation of the examining physician and although this method does not permit precise quantitation, they are valid and establish the point that alterations in tissue texture are not organized to the point of being static.

Organic changes occur not only in the soft tissues mentioned above but in bone as well. The latter occurs in the form of stress deformities and is typified by
the wedging of vertebral bodies which is a part of many long-standing spinal curvatures. Since bone changes must be examined by x-ray they will not be discussed in this paper. As regards the organic changes in soft tissues, there is much speculation as to their exact nature and to the degree to which they are reversible. Certainly fibrous adhesions and bands may be described and probably torn. In contrast to functional changes, organic changes are altered more slowly. However, except for the time differential, the improvement or regresive, of the latter is somewhat similar and may be detected by palpation.

Classification of Tissue Change.—The fact that there are almost as many descriptions of tissue abnormalities in lesion areas as there are osteopathic physicians is evidence that the abnormalities do not fall into sharp and easily differentiated classifications. In addition, to date only one phase of changes in the muscle component of the lesion has been objectively studied. However, certain generalizations, based on physical findings alone, can be made. One of the fairly common classifications is one which divides lesions into three groups, acute, subacute, and chronic. In gathering material for this paper the writer has re-examined his experiences with this classification in view. In evaluating the palpable changes and the response to palpation pressure it seems that acute lesions feel as though moderate amounts of air had been injected into the tissues; they are characterized by a doughy, boggy texture, with considerable hyperesthesia evidenced, and by a decrease in ease and freedom of joint movement. Deep fasciae present an abnormally hardness and rigidity, a comparative absence of hyperesthesia, and a decrease in total motion rather than a loss of ease and freedom of movement. The subacute division seems to fall in between the acute and chronic. Actually it seems that long-standing subacute lesions, at different times, are first in one group and then in the other. Henceforth in this paper lesion areas will be referred to as acute, subacute, and chronic.

Significance of Soft Tissue Changes.—As has been stated, changes in the texture of the supporting tissues of joints are of great importance. This is because the texture of these tissues is not only altered by the state of the joints themselves but of distant influences as well; that the presence of abnormal tissue texture must be evaluated in view of all factors which might account for it.

This is somewhat in contrast to earlier views, held by many of us, which placed a major emphasis on positional and weight-bearing stresses. The latter continue to be significant, of course, but results of tissue study indicates that now they are at least equalled in importance by evaluation of the supporting tissues.

Lesion Patterns.—As stated under classification, osteopathic lesions are not easily set apart into groups. However, there are certain types of conditions in which definite patterns may be identified.

Acute Infections.—In all acute bacterial or virus infections there are pathologic changes in the tissues and, at times, also in those of the appendages. These changes are acute in character. The skin and superficial tissues seem tense—almost spongy, the muscles are hard and rigid and there is a palpable palpable hardness to the palpatory findings of osteopathic physicians there have been almost no objective studies of these changes.

While the fact that the skeletal components of acute infections can be decreased by osteopathic manipulative treatment is of great importance, it is of equal significance that the severity of the condition can be estimated by the time required for the tissue changes to recur after improvement under treatment. This makes possible more accurate estimates of the extent and intensity with which supplemental treatment programs must be instituted. Modern therapy, with the sulfa drugs, penicillin, oxygen, parenteral fluids, etc., is complex and expensive, and the ability to judge when and to what extent these measures should be employed is of great importance.

Since the early days of osteopathy, when almost all chemical and biologic therapeutic agents were hazardous and of questionable value, great advances have been made in these fields. Now supplement therapy is used in every osteopathic institution known to the writer. The task of the osteopathic profession is to determine, on the basis of the findings presented by each patient, when and to what degree, measures other than manipulative therapeutics should be employed. The point in including such a discussion in this paper is that if the soft tissue changes which are being considered represent one of the most effective criteria which may be used to estimate the patient's progress and to determine what therapeutic program is indicated. This point is particularly apropos here in the state of New York which has recently joined the ranks of the states which do not limit the practice of osteopathy. Our task is to use the osteopathic examination, particularly the evaluation of soft tissue changes, to determine what the indication is for specific osteopathic therapy and when and to what extent it should be supplemented.

A young osteopathic physician recently said that he used the sulfa drugs and penicillin for cases that responded well and only treated osteopathically those cases which didn't progress well on that management. Since the sulfa drugs are not without hazard and since a patient should not be made penicillin-fast except in extremely serious conditions it would seem that the young graduate's program should be reversed and that chemotherapy should be withheld until the persistence or rapid recurrence of lesion pathology indicates a bacterial invasion too great to permit its controls by the body's natural defense mechanisms.

Psychosensitization.—In neuroses, psychasthenia, and hysteria there are widespread acute and subacute changes in the paravertebral tissues which are out of all proportion to mechanical and weight-bearing imbalances. It would be foolish to attempt, at the present level of our knowledge, to establish lesion pathology alone as the biological factor in these conditions. However, we see many patients with widespread effects of lesions who are not neurotics. At the same time, it would be equally foolish to ignore the objectively demonstrated
causative factor of the lesion in analysis of these cases.

As a result of osteopathic manipulative treatment some patients show permanent improvement in tissue abnormalities (and in symptoms), some temporary, and some no improvement. The very demonstration, however, of recurring or persistent soft tissue changes indicates that there are actual etiological factors (despite their obscurity) and that these patients are not simply imagining their complaints.

As will be indicated in the next section, the observation of widespread subacute and subacute lesion manifestations in the paravertebral and, at times, in the appendicular tissues. There is considerable hyperesthesia and reflex thresholds are greatly lowered. In this condition the decision of whether to employ conservative or surgical management is difficult to make except, of course, in those cases where the patient's general condition demands surgery as soon as proper proproatory measures can be taken. The decision concerning management is greatly facilitated by the careful evaluation of soft tissues following manipulative treatment plus supporting measures such as bed rest, high caloric diet, etc.

Three cases will illustrate this point. Two adult patients in their thirties had basal metabolic rates, at various tests, of between +30 and +40. Both had pulse rates which did not get below 110 at rest. Both had good nutrition despite small weight losses. In each the most pronounced lesion pathology involved the lower cervical and upper thoracic segments although the entire vertebrocolumn was involved to some degree. They were placed at bed rest and given daily manipulative treatment designed to articulate, with slowly applied and released forces, the entire vertebral column. Within a few days there was symptomatic improvement and a decrease in the intensity of the lesion pathology. As improvement in the soft tissues occurred manipulative treatment was increased in extent and decreased in frequency. The gradual soft tissue improvement was the finding on which the extent of bed rest and the ultimate decision not to use surgical treatment was based. These patients were seen for occasional treatment after the basal metabolic and pulse rates returned to normal.

The third case was one in which the patient would not stop work until, despite great determination, he simply could not push himself through a day's work. Clinical findings were exopthalmos, rapid pulse, loss of weight, tremor, ravenous appetite, insomnia, and profound exhaustion. (Exact data on pulse, the basal metabolic rate, etc., are not available but the patient is a physician and there is no question as to the diagnosis of advanced thyrotoxicosis.) He also had a deep and intense ache centering in the region of the angles of the second and third ribs on the left side. This ache was in direct proportion to fatigue and to the rapid pulse, being great when the latter factors were marked. A thyroidectomy was performed and an excellent clinical result obtained with the patient returning to his former robust state. About 5 years after the thyrodeectomy three of his symptoms began to return (without the basal metabolic rate going above +14). They were the ache at the second and third ribs, the insomnia, and the tachycardia in a mild form. The writer saw the patient at this time. There was an almost complete absence of lesion pathology except in the upper thoracic vertebral and rib joints on the left side. In these areas, however, there was marked acute lesion pathology. Osteopathic manipulative therapy was followed by marked alleviation of the soft tissue abnormality and complete elimination of symptoms. The patient was seen periodically by the writer for a 6-year period during which time there were only very small flare-ups.

The relation of tissue change to symptoms was the same in each case.

Focal Infection.—Although the mechanism which accounts for it is obscure, focal infection, particularly in the writer's experience when it involves the teeth, is associated with widespread changes in soft tissues. This change is characterized by the fact that osteopathic manipulative treatment has little or, at best, temporary effect on the symptoms about which the patient complains or on the pathologic findings in the paravertebral tissues. Since focal infection (such as alveolar abscesses which are not demonstrated by x-ray) may escape direct detection, persistence of soft tissue changes is strong supporting evidence that regions in which the normalcy of tissues is questionable should be definitely included in any plan for therapy.

Other Constitutional States.—There are a number of diseases, with widespread effects, such as the malignancies, cardiovascular disease, chronic pulmonary disease, myocardial syndromes, varieties of or meningitis, diabetes, etc., which reflect certain changes in the paravertebral tissues. However, they are not sufficiently distinct, or well enough understood, at least by the writer, to warrant discussion at this time.

Localized Lesion Pathology.—At the outset of this section it must be re-emphasized that human beings, from "sen agers" on up, who are completely free from at least minor lesions are as rare as those who are free from dental caries. This observation is paralleled by the studies reported at the White House Child Health Conference of 1951, where, with methods which completely missed all weight-bearing stresses except those sufficiently gross to be reflected in body contours, poor body mechanics was noted in over 90 per cent of the children and young adults examined.

Fortunately, the adaptive and protective mechanisms, which are fundamental biological traits, permit normal function despite a certain amount of pathologic influence. This statement has great significance in the evaluation of the paravertebral tissues since it permits an understanding of the reason for certain clinical observations. They are: (a) That lesions exist without causing clinical abnormality; (b) that when lesion pathology exceeds the limits of adaptation it is not necessary to return the joints to an absolute normal, but merely to return it to within those limits; (c) in a given case the location and alleviation of the essential etiological factor will be adequate to secure a satisfactory clinical result even though a certain degree of lesion persists.

The Etiology of Localized Lesion Pathology.—Localized
lesion pathology is invariably found in connection with a segmentally related etiological factor which may or may not coexist with some distant abnormalities. This is a point of great importance because often the distant factor is so obvious that it is considered to be the basic cause of a given condition by the patient and, too frequently, by the physician as well. This point will be illustrated.

The first case is one in which the patient "self-diagnosed" her problem, a disabling facial neuralgia, as being due to "the邮ging of tooth decay and jaw." One osteopathic physician relieved the neuralgia to a minor degree by manipulative treatment. She went to a second D.O. who, in addition to finding cervical and temporomandibular pathology discovered that the patient's home life was, at times, intolerable, and that her severe attacks of neuralgia coincided with flare-ups in her home environment. His counsel aided in eliminating her difficulties in her home and, in this, together with attention to the skeletal lesions, secured a satisfactorily clinical result. The environmental distress was embarrassing to the patient and she did not volunteer information about it in the history. It was discovered when the physician failed to secure an adequate degree of improvement in the tissue abnormality of the involved joints and consequently hunted out the other etiological factor. A second case is that of a woman who complained of persistent pain in the upper right quadrant which radiated to the back. Her appendix and later her gallbladder were removed. Both operations provided temporary relief. The only positive finding at physical and osteopathic examination was an area of acute lesion pathology in the upper lumbar area on the right side. Typical of many patients she refused x-ray examination stating that she had already spent thousands of dollars on hospitalization, examinations, operations, etc. Manipulative treatment was applied on a therapeutic test basis with the understanding that if it was not effective further studies would be made. Treatment was applied twice, both times without producing an alleviation in the soft tissue abnormality. X-rays were then taken and a small and then a large and more posterior fracture of the anterior superior angle of the body of the second lumbar vertebra was discovered. The patient was immobilized in a brace, which was removed twice weekly for careful stretching of the involved joints, and made an uneventful recovery.

A third case is one in which a male in his early thirties was incapacitated due to "tenderness" and fatigue of his lower extremities and persistent low-back pain. He had been treated off and on by several different osteopathic physicians with temporary relief. Osteopathic examination revealed a marked rotation of the pelvis but with no lateral curve in the lumbar area and with apparently, at physical examination, no leg length discrepancy (despite an atrophied lower left leg due to infantile paralysis in childhood). There was widespread subacute lesion pathology in the sacroiliac and gluteal regions. X-ray examination in the standing position revealed a deformity of the right hip joint and an anatomical shortness, on the left side, of 2 inches. Manipulative therapy was directed at eliminating the soft tissue changes and at derotating the pelvis. This treatment together with a gradual decrease in the leg length discrepancy with heels lifted produced a permanent improvement in the tissues of the pelvis and a complete relief of symptoms. In each of these three cases there were two important etiological factors. In two of them an articular lesion, identified positively by local abnormalities in the texture of the tissues, coexisted with a distant abnormality. In each of the latter the effect of manipulative therapy was temporary due to the failure to eliminate all the articular pathology and to the persistence and severity of the distant etiological factor. The obvious conclusions to be drawn from these observations are: (a) That such articular disturbances are of sufficient standing to require considerable therapy; (b) that the improvement is gradual and not the result of a complete elimination or "correction" of the pathological findings at each treatment, with a recurrence after each treatment; and (c) that the lesion apparently exerts a localizing effect in cases where there is a pathologic influence affecting the whole organ. In the latter two cases this is quite apparent. The importance of psychic trauma and of a major weight-bearing abnormality is obviously great and significant to the fact that local lesion changes coincident with the patient's symptoms must be recognized.

Progress of Tissue Changes—We have demonstrated in the laboratory* that such almost insignificant procedures as lightly tapping a patient on his shoulder may reduce the spinal cord irritability to a great degree in a fraction of a second and that flatulence from an excessively large meal causes reflex muscle contraction which is promptly relieved by a substantial decrease in the size of the gastric air bubble. Consequently, it is obvious that tissue abnormalities may change, in extent and degree, at a very rapid rate. These facts indicate that the treatment of such joint changes must be subject to constant and instantaneous control. From the standpoint of osteopathic technic this means: (a) That a structure under treatment must be re-evaluated every few moments to determine the effectiveness of the forces being applied, and (b) that the use of routine manipulation without an understanding of the functional and organic pathologic processes is of questionable value but may result in actual harm to the patient.

SUMMARY
1. Analysis of the soft tissue coverings and supports of joints is an important factor in osteopathic diagnosis.
2. Location, extent and severity of soft tissue abnormalities may be identified by palpation.
3. Soft tissue changes in an area of lesion reflect the level of irritability of certain spinal reflex arcs.
4. Soft tissue pathology reflects the influence not only of the joint to which the tissue is attached but of distant organs and tissues as well.
5. Improvement or regression in the patient's clinical condition frequently may be predicted by an analysis of the texture of the tissues overlying and supporting the joints.
6. Manipulative treatment should be controlled by a continuous evaluation of the texture of the tissues being treated.

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REFERENCES