Myofascial Pain Syndromes - Part II: Syndromes Of The Head, Neck And Shoulder Girdle

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It is the purpose of this article to point out the basic similarities among a group of syndromes having the common factors of myofascial pain or pain referral. In any particular syndrome the myofascial pain may be primary and uncomplicated, may be primary and complicated by secondary manifestations, or may itself be a secondary manifestation of another affection. In each of these symptom complexes the treatment of the myofascial pain component can be an essential part of the total relief afforded the patient; in many instances such treatment can be curative. The general treatment of myofascial pain has been discussed in Part I of this series so that the present discussion will deal mainly with the details and variations of this therapy in the individual syndrome.

It is difficult to classify myofascial pain by any method other than anatomic or eponymic. Any attempt to classify this pain physiologically meets with the problems previously mentioned. The syndromes hence go under such uninspiring, but accurate, names as cervicobrachialgia, scapulocostal syndrome, and scalenus anticus syndrome.

One group of syndromes appears in the medical practice of almost any physician, specialist or general practitioner, with amazing frequency. This group occurs in the form of aching pain in the head, neck, upper back, shoulder or arm. It has the group characteristics of the myofascial pain syndromes. In short, if it appears as pain in the head it may be called cervicocephalalgia; in the neck—trapezius syndrome or cervicalgia; in the back—scapular syndrome, in the arm—cervicobrachialgia or scapulo-humeral syndrome; in the rib cage laterally and inferiorly — scapulocostal syndrome. The syndrome can be named by its own anatomic location if non-radiating, or by its direction of radiation if radiating — e.g. cervicobrachialgia.

SPECIFIC SYNDROMES

1. Tension Headache: It is not the purport of this author to imply that tension headaches are primarily caused by myofascial disease. However, the presence of myofascial changes in the presence of tension headache is often observed and is well documented. It has been rather conclusively shown that the presence of pain in the head will produce neckache, and that reciprocally the presence of neck pain will produce headache in some cases. In the patient with tension headache, relief can sometimes be afforded to a remarkable degree by the application of physical measures of treatment to the neck musculature.

Tension headache can be defined as a dull, fairly continuous headache located usually bilaterally in the frontal or temporal regions and often accompanied by pain at the occipitocervical junction. It shares several characteristics with myofascial pain — the aching, dull, continuous character, the exacerbation by increased activity, emotional tension, changes in the weather, long periods of inactivity or long automobile rides involving constant strain.

Examination of the affected parts will turn up little of significance outside the...
muscular system. All other sources of headache have often been eliminated by the time the muscular component is noticed by the physician. In examining the musculature of the posterior neck and upper back there will appear tender areas in the musculature, usually quite deep. The patient will experience a rather sickening, dull pain in the palpated area. In a significant number of patients (unfortunately far from all of the patients) the patient will immediately complain that his headache has started, or has become worse; in this group of patients the trigger point for the headache can be considered definitely located. In most patients such an easily demonstrable trigger mechanism does not exist. The physician must then rely on established trigger areas of reference for headache in order to treat the proper tender areas effectively.

The trigger areas most commonly involved in tension headache, are located in the cervicocapitate attachments of the long back musculature, in the mid cervical paravertebral musculature, in the mid upper trapezius, in the sternomastoid belly, and in the upper origins of the scalenus anticus, in order of approximate frequency of occurrence. Some of these trigger mechanisms have been singly named, such as "sternomastoid syndrome", but the method of pain production is similar in all. The differences exist only in variations of pain reference on the head. As a group these pains can all be called cervicoccephalalgia.

The mechanism of "tension headache" is assumed to be cyclical. It includes a tension situation, tightening of neck musculature, spasm of localized areas of neck musculature, increased tension and worry, increased spasm, and so on, until it leads to possible proliferation of fibrous tissue in musculature with formation of the evanescent "fibrositic nodule". This cycle may start at either a psychologic or physiologic point on its circumference, and can be broken up by entering at any point in the cycle. A therapeutic approach directed at several points in the cycle simultaneously can be expected to produce the best results. An accurate appraisal of collective treatment results is difficult in the face of the information that 50 percent of tension headaches can be relieved by placebos.

Most of the tension headaches seen by this author, if accompanied by myofascial changes, are accompanied by chronic myofascitis. The treatment of the myofascial component of the pain is therefore the treatment of chronic myofascitis of the cervical musculature. This is done by a combination of salicylization, (I have not used a large amount of ergot or caffeine compounds, but their efficacy is unquestionable) muscular stretching, local heat, and trigger point injection.

The muscular stretching is done by means of the "Sayre" sling method. Intermittent traction applied once or twice daily for a period of fifteen minutes is apparently as effective as continuous traction. The sitting position is preferred for the administration of traction. A forty-five degree forward angle of stretch is advocated by some authors, but effectiveness seems as good if traction is exerted straight up. Traction is carried out in three approximately equal increments of five minutes each to a daily upper limit of fifteen, twenty or twenty-five pounds. In refractory cases in heavily built persons as much as fifty pounds may be required. It is better to underestimate than overestimate traction requirements because of the extreme soreness of the neck which may result from excessive weights for a given individual. Amounts are raised successively if no response is obtained. Each traction session is preceded by fifteen minutes of infra red heat to the back of the neck. This is given in the prone position,
since some patients faint if heat is applied to the neck in the sitting position.

Most traction therapy can be given as home treatment. One session of traction instruction and demonstration will suffice if given by an experienced physical therapist. The physician can then see the patient at intervals for verbal instruction in traction weight changes at the same time other therapy is administered by him.

Injection is the major adjunct to traction in cervicocephalalgia. It is indeed usually used prior to traction, for the early discovery of the offending area may obviate the use of traction at all. Once the trigger area or areas are located they are subjected to injection at weekly intervals with the mixture of local anesthetic and hydrocortisone derivative of the physician’s choice. If a response is going to occur, it will usually occur after one injection, sometimes will take two injections, and will rarely respond if it has not responded to three consecutive injections. The response as a rule is not permanent after initial injections, for symptoms will recur to some extent within two or three days. However, each recurrence will be less severe than its predecessor. Injections should be continued as long as the patient continues to improve, or until he is well. Traction should be added in the event of injection failure or to potentiate injection therapy; traction may be used de novo and solo if it is more convenient to patient and physician. A review of tension factors in the patient and his environment is of course essential to ultimate success of therapy.

2. Trapezius syndrome, a cervicalgia, or tension neckache: This syndrome is one that should be called “schoolteacher’s neck”. It occurs often as a tension manifestation, though almost equally often as the result of relatively “minor” trauma to the neck. As such it forms a major cause of pain in the “whiplash injury” of the neck. It may occur as part of the total pain spectrum in more severe lesions, such as cervical disc, cervical cord tumor, or vertebral metastasis. Its pain is characteristically located in the soft tissues at the side of the neck and top of the shoulders, in the neighborhood of its common trigger point. This trigger point is located in the mid-upper trapezius or in the musculature just superior to the medial, upper angle of the scapula. It is best felt by compressing the tissues against the posterior aspect of the first rib and first thoracic transverse process, or by squeezing the soft tissue of the medial shoulder between thumb and forefinger.

Pain may radiate from the trigger area across the point of the shoulder or to the base of the skull; in the latter instance it becomes a cervicocephalalgia and merges with the above classification of tension headache. This myofascial syndrome thus overlaps the syndrome above it. By so doing it may often spread to cause other manifestations of the neighboring syndrome. This type of behavior is common among certain patients (those with the “fibrositic diathesis”) so that a patient starting with a whiplash injury may develop first a trapezius syndrome, and later go on to develop the whole gamut of head, neck, shoulder and arm syndromes.

This syndrome seems to have a particular affinity to exacerbation by sudden increases in activity. A tension neckache may be under good control until the patient decides to polish the car, paint the walls, take a long automobile trip, do her own ironing or mark a batch of examination papers. Such activities are those which require prolonged muscular tension in the upper shoulder segments. Avoidance of predictable sources of exacerbation is therefore an integral part of therapy of this syndrome. In cases involving the patient’s occupation, such as stenography, this often
presents a sizable problem since the patient cannot stop typing on the job and cannot change jobs because of lack of training. I suspect that heavy brassiere straps are also severe offenders in the production of continuous shoulder tension, but modern engineering knowledge has not yet solved this problem to the satisfaction of the wearers.

In the direct management of this syndrome the combination of trigger point injection and cervical Sayre sling traction is again the foundation of treatment in addition to systemic anodynes. The schedule of traction treatment is the same as that used for the cervicocephalalgias. The relief of tension by interview assistance is again important.

3. Scapulohumeral syndrome; scapulocostal syndrome (the scapular syndromes): These two names are not synonyms. The scapulocostal and scapulohumeral syndromes are two separate entities, but are discussed under one heading here because of the marked similarities in their causes and treatment. Both syndromes have trigger areas in musculature arising or inserting on the scapula, producing distant radiation of pain. Both syndromes have a common occupational stress factor appearing often in the history. Although mental stress remains important in these syndromes as in others discussed\textsuperscript{13}, there is an important postural and repetitive motion factor here. The entire group of scapulohumeral and scapulocostal manifestations are discussed by Russek in his excellent article\textsuperscript{4}; however, he does not differentiate the various components of what he considers a single syndrome. He includes symptoms radiating from the scapulocostal articulation and resulting he feels from abnormalities of this articulation. I prefer to use a strict anatomically descriptive interpretation of terms until more basic evidence is accumulated concerning the true origin of these syndromes. Hence, in this discussion “scapulocostal” means pain referred from the scapula to ribs; “scapulohumeral” means pain referred from the scapula to the arm (and should more accurately be called scapulobrachial).

The scapulohumeral and scapulocostal syndromes appear very commonly in consort. Therefore, the combined finding of scattered scapular area trigger points plus significant arm and costal cage pain is also common.\textsuperscript{7} One of the most usual precipitating factors is the occupational factor mentioned above, and Russek refers to the following categories of worker as particularly prone to the illness—machine operators, pressers, fitters, seamstresses and cutters—to which again can be added schoolteachers and stenographers.

The scapulohumeral and costal complexes can also appear as part of any affection of the glenohumeral joint region, as secondary manifestations of bursitis, rheumatoid arthritis or osteoarthritis, or as the secondary manifestations of “minor” trauma in the shoulder region. Continued, unaccustomed strain, or sudden, violent strain (without muscular or ligamentous rupture) may produce the syndromes, or they may appear as secondary pain factors following destructive injuries such as fractures or ligamentous tears. Root compression syndromes of the cervical spine may set up cervicobrachalgic reference patterns of pain which develop into full blown scapular syndromes by the production of trigger points within the zones of reference. Certain forms of the shoulder-hand syndrome are simply scapulo-humeral syndromes which have been precipitated within the zone of reference of other pains (viz—cardiac pain). In like manner the scapulocostal syndrome can be a secondary development in the reference
area of an intercostal neuritis (for which it is often mistaken), or in the zone of thoracic root compression reference.

In each of the above instances, the scapular syndrome is not primary; however, the treatment of the syndromes will often lead to remarkable relief of what was thought to be the “primary” pain. Indeed the scapular syndromes can be primary in themselves, and their subsequent treatment results in complete relief of symptoms.

In the scapulohumeral syndrome the reference area of pain is in the entire lateral upper arm, forearm, the fingers and the thumb. The trigger points are located in the infraspinatus or at the medial scapular border. A pectoralis major trigger point often accompanies this syndrome, as does a long biceps tendon area, but these cannot be strictly considered part of this syndrome.

In the scapulocostal syndrome the pain is referred laterally and downward to the lateral, anterior, inferior rib cage. A common complaint in women is pain and tenderness just below the breast in the rib cage; pain and tenderness in the mid-axilla and inferior axilla is also common. There is also often a complaint of tenderness at the medial border of the scapula, noticed by the patient when he lies on the affected side, lies on his back, or leans his back against a hard chair. The trigger point for this syndrome is almost invariably located at the medial scapular border, or in an area bounded by the mid-point of the medial scapular border, the inferior tip of the scapula, and by the midline of the back between corresponding levels of vertebrae.

These syndromes may be encountered in any stage of activity—acute, sub-acute or chronic. In the acute stage, intense heat is applied most easily with the steam cabinet (twenty minutes twice daily) or very hot packs (hydrocollator—same time periods); codeine is often required, and hospitalization is not uncommon. If home treatment is imperative, home hot packs may be used, or a heat lamp will do. When the diffuse tenderness and extreme muscular excitability and spasm of the acute stage have subsided, the tenderness will usually localize near the trigger areas. These areas should then be injected at intervals with an anesthetic-hydrocortisone combination. The frequency of injection should be timed to allow significant improvement, or determine the lack of it, before repetition of injection. As the subacute stage passes into the chronic, or convalescent, traction may be added, particularly if there has been involvement of the upper scapular attachments. Salicylization is continued throughout the entire treatment course and the patient is allowed to perform no activities which can be predicted to cause exacerbation of the syndrome. As healing occurs, a compromise must often be made in allowing the patient to return to work. This must be done with the patient’s understanding that this will prolong the necessary period of treatment. In the presence of recurrent attacks of these syndromes a job change is sometimes essential; under any circumstances some modification of the precipitating type of work should be attempted. This is easier said than done.

4. Scalenus anticus syndrome: This syndrome, nebulous as it sometimes appears, has become a fairly frequently diagnosable entity. In its classical form it includes cervicobrachalgia, vascular symptoms in the form of decreased pulse or blood pressure, secondary neurologic findings of anesthesia, hypesthesia, paralysis or weakness in the arm, and tenderness over the scalenus anterior. This syndrome is a manifestation of the effects of myofascitis of the scalenus anticus muscle, and the syndrome is hence amenable to those treatment methods effective in myofascitis. Myofascitis of the
scalenus anticus is an extremely common finding among the group of head, neck and shoulder pain syndromes. It is not necessarily accompanied by any secondary findings in the arm, and is probably more commonly seen without such secondary findings or symptoms. During the course of the syndrome, the anterior scalene muscle causes the production of pain successively or together in each of the segments of segmental distribution—sclerotomal, myotomal and dermatomal.

The pathogenesis of the scalenus anticus syndrome can be postulated as follows. During the first stage of the syndrome (usually unrecognized as such), the muscle is moderately in spasm, slightly tender to the touch and sometimes spontaneously painful in situ. In this stage of early involvement a classical trigger-reference combination develops and may produce pain in the anterior chest, anterior or posterior arm, or upper, medial scapular border region. The pain distribution at this stage is sclerotomal (referred to the fascial, osseous, synovial and ligamentous radiations of the segment) and myotomal (directly interpreted pain in the muscles.)

As the pain and “spasm” or increased tension of the muscle increase, the syndrome progresses to its classical form. This can be differentiated into two types—a superior type, involving compression particularly of C-6 and C-7 roots, and an inferior type compressing the C-8 and T-1 roots and the subclavian artery. The pain distribution then corresponds to the dermatome involved in the compression, and the weakness corresponds to the myotome of the compression. In addition to these obvious causes of pain, the additional formation of trigger points within the reference areas may set up new, secondary pain syndromes.

The treatment of the scalenus anticus syndrome is the treatment of the scalenus anticus muscle. Manifestly, refractory cases should be surgically treated; results are reported as satisfactory. However, conservative treatment is quite effective in most cases, and certainly is all that is indicated prior to the development of secondary neurologic signs.

Treatment is predicated not on the stage of development of the syndrome as described above, but rather on the phase of myofascitis in which the scalenus anticus is discovered. Regardless of physical secondary findings, the acutely inflamed scalenus is treated as any other acutely inflamed muscle, the subacute as a subacute muscle and so forth.

During the acute stage, twice daily intense heat on the neck, plus salicylization is used; positioning of the neck, with the ear down toward the shoulder on the affected side, and the neck in flexion may be helpful. During the subacute stage, injection of the scalenus is begun, with the injection aimed at that portion of the body or tendinous origins which seem most involved. As the muscle quiets down it is subjected to stretching by Sayre sling neck traction. It is important not to carry the protective positioning of the neck beyond the acute stage, for this will result in secondary contracture of the scalenus and an increase in secondary signs.

During the chronic or convalescent phase, active exercise may be given to raise the point of the shoulder and thereby prevent stretch of brachial plexus components over the first rib; the efficacy of this maneuver is open to question. Again, occupational adjustment may be important since the scalenes are important positioners.
of the head and neck in many occupations. Also emotional tension factors have repeatedly been proven important in this syndrome and should be worked through with the patient.

It should be emphasized that the scalene syndrome often exists without secondary effects on the brachial plexus or axillary artery. Its recognition at the stage of trigger point or local pain reference will materially reduce the chances of development of secondary manifestations.

In a subsequent issue of this journal will be discussed the myofascial pain syndromes of the trunk and pelvic girdle.

REFERENCES