

Clinical Medicine

Prevalence of Myofascial Pain in General Internal Medicine Practice

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Myofascial pain is a regional pain syndrome characterized in part by a trigger point in a taut band of skeletal muscle and its associated referred pain. We examined a series of 172 patients presenting to a university primary care general internal medicine practice. Of 54 patients whose reason for a visit included pain, 16 (30%) satisfied criteria for a clinical diagnosis of myofascial pain. These patients were similar in age and sex to other patients with pain, and the frequency of pain as a primary complaint was similar for myofascial pain as compared with other reasons for pain. The usual intensity of myofascial pain as assessed by a visual analog scale was high, comparable to or possibly greater than pain due to other causes. Patients with upper body pain were more likely to have myofascial pain than patients with pain located elsewhere. Physicians rarely recognized the myofascial pain syndrome. Commonly applied therapies for myofascial pain provided substantial abrupt reduction in pain intensity. The prevalence and severity of myofascial pain in this university internal medicine setting suggest that regional myofascial pain may be an important cause of pain complaints in the practice of general internal medicine.

(Skootsky SA, Jaeger B, Oye RK: Prevalence of myofascial pain in general internal medicine practice. West J Med 1989 Aug; 151:157-160)

Myofascial pain is a clinical syndrome of soft tissue pain arising from skeletal muscle. Specific criteria are evolving but include an active trigger point, which is a discrete tenderness in a taut band of skeletal muscle, and its associated regional referred pain.¹⁻⁷ A key to understanding the myofascial pain syndrome is that a patient's pain complaint is pain referred from skeletal muscle. Because of this, the pain site is usually distant from the causative active trigger point in skeletal muscle (Figure 1).^{4,5,8,9} The pain is regional rather than generalized, and the referred pain patterns appear to be consistent and reproducible. Compressing the active trigger points characteristically intensifies the associated referred pain, and multiple trigger points can produce overlapping areas of referred pain.⁶

The mechanism of the referred pain symptoms in myofascial pain is not known, although the notion of referred pain from muscles and other tissues is well documented.^{8,10} One possibility is the convergence of visceral and somatic sensory inputs onto pain projection neurons in the spinal cord.¹¹

Recent studies have objectively documented several clinical features of myofascial trigger points. In one study, pressure algometry was found to be a reliable index of trigger point sensitivity.¹² In another study, the "stretch-and-spray" technique, a suggested therapy for myofascial pain, reduced trigger point sensitivity as assessed by pressure algometry and the referred pain as assessed by a visual analog scale.¹³ Friction and co-workers reported higher motor unit activity to a standard stimulus in electromyographic recordings taken within 2 cm of trapezius trigger points located in taut bands

of muscle.² Modern detailed histologic and biochemical studies of trigger points from patients with unambiguous myofascial pain are lacking.

Clinical descriptions of the myofascial pain syndrome, under various terms, date back more than 100 years.^{14,15} Good called attention to "anatomically defined muscular areas," now called trigger points, that resulted in referred pain syndromes.⁷ Earlier, Kellgren had shown experimentally that referred pain could arise from muscle.¹⁶ These ideas were brought together by Travell and Rinzler and others in studies delineating the typical pain referral patterns of active trigger points within many muscles.^{4,8} A compendium of the pain referral patterns for many muscles has been published.⁹

The myofascial pain syndrome is the source of some controversy,¹⁷⁻²⁰ especially in its relationship to primary fibromyalgia, which is likely to be a distinct disorder. Despite this controversy, the clinical syndrome of myofascial pain as a regional pain complaint has been useful to many investigators and clinicians and has been reported as a cause of pain complaints in neurosurgery,²¹ gynecology,²² chronic pain,²³ physical medicine,²⁴ temporomandibular disorders,²⁵ headaches,²⁶ rheumatology,²⁷ neurology,²⁸ and pediatrics.²⁹ The recent interest in the myofascial pain syndrome is reflected by the National Library of Medicine's use of myofascial pain syndromes as an indexing term and by the inclusion of two specific myofascial pain syndromes in the taxonomy of pain published by the International Association for the Study of Pain.³ While reviews of myofascial pain contend that it is

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Presented in part to the American Pain Society, Washington, DC, November 1986.

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common in general medical practice,⁶ the prevalence and features of this clinical pain disorder in primary care internal medicine have not been reported.

To determine the importance of myofascial pain in the day-to-day practice of general internal medicine, we studied its prevalence and features in a primary care setting.

Patients and Methods

All English-speaking ambulatory patients scheduled for new evaluations or routine follow-up appointments with a resident physician at the UCLA Medical Ambulatory Care Center were eligible for the study. The Medical Ambulatory Care Center is a primary care general internal medicine group practice in a university teaching hospital. The practice provides both episodic and comprehensive care to patients from a wide range of socioeconomic strata. We enrolled every patient scheduled in 19 different half-day sessions between January 1986 and March 1987. All patients were asked by the receptionist to complete a brief questionnaire to determine if the reason for their appointment included pain. Patients chose among three statements to indicate the reason for their visit: pain, some other reason, or pain and some other reason. After informed consent and instruction, patients who indicated that the reason for their visit included pain were asked to complete a second questionnaire. Demographic data—age, sex, and insurance coverage—and the location, duration, and usual intensity of their pain were recorded. Patients with pain were asked to mark its location on a multiple-view body diagram. The usual pain intensity was measured by using a standard 10-cm visual analog scale.^{30,31} The patients were not informed of the research question or given any information concerning myofascial pain or other muscle pain syndromes. Immediately after being seen and discharged by their regular physician, the study patients with

pain were interviewed and examined by one of us (S.A.S. or B.J.) in a separate examining room without further involvement of the patient's physician.

Guided by patients' pain descriptions and body diagrams, we systematically examined patients with pain to determine the cause of their pain. Patients with an acute or chronic medical diagnosis that adequately explained their pain—such as pharyngitis, neuropathy—had their diagnosis recorded after confirmation. Chart review and an interview with the patient and the patient's physician were used to determine other causes of pain.

Patients in whom a straightforward medical diagnosis could not be readily established had a detailed myofascial trigger point examination. In making the clinical diagnosis of myofascial pain, we correlated the patient's pain complaint with published pain referral patterns⁹ to identify all muscles possibly harboring causative trigger points. Each of these muscles was examined for discretely tender points in bands of muscle (potential active trigger points), and, when found, these tender points were manually compressed for 5 to 20 seconds to see if the patient's pain complaint could be intensified. Thus, to make a clinical diagnosis of myofascial pain, we required that the patient have pain, that the pain pattern conform to the established referral maps, and that the trigger point examination intensify the patient's pain complaint. The muscles harboring the active trigger points were recorded. We excluded tender points that did not refer pain or that elicited a referred pain pattern but did not reproduce the patient's pain complaint.³²

As part of the research evaluation, patients with the diagnosis of myofascial pain were treated by one of us (S.A.S. or B.J.) with either stretch-and-spray or trigger point injection³³⁻³⁵ as currently described.³⁶ Study patients were not told that these methods represented treatment, only that the investigators were measuring any effect of them on their pain. Before treatment, patients with myofascial pain rated their pain intensity (the referred pain) by using a standard 10-cm visual analog scale. For stretch-and-spray therapy, the involved muscle was passively stretched for about 20 seconds, while four to six sweeps of vapocoolant spray (Fluorimethane, Gebauer Chemical Company, Cleveland) were applied over the trigger point and into the area of pain referral. This procedure was repeated two more times at about one-minute intervals. For trigger point injections, the trigger point was located by direct palpation, disrupted by needle penetration, and injected with ½ to 1 ml of 0.5% procaine hydrochloride. Within five minutes of treatment, a posttreatment visual analog scale was again recorded.

We used microcomputers to analyze all data using commercially available data-base and statistical software (dBase III Plus, Ashton-Tate, Torrance, and Crunch Statistical Package, Crunch Software, Oakland, California). χ^2 , Fisher's exact test, and the paired *t* test were used to determine statistical significance. A *P* value of less than .05 was considered statistically significant. Confidence intervals were calculated by standard methods.³⁷ Follow-up data were obtained by reviewing the medical charts. The study protocol was approved by the UCLA Human Subjects Protection Committee.

Results

A total of 201 consecutive patients were asked to participate in the study; 29 patients were excluded—17 refused to

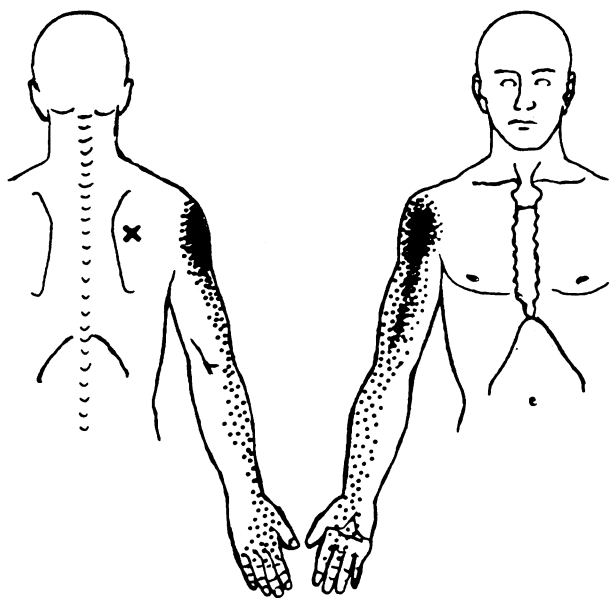


Figure 1.—An example of a regional referred pain due to the myofascial pain syndrome is shown. A referred pain pattern is represented by the shaded areas, and the typical location of the corresponding trigger point (X) is shown in the right infraspinatus muscle. The solid areas represent the predominant referred pain pattern, and stippled areas represent additional pain patterns. The typical patient complaint to a clinician would be "shoulder pain." Note that the region of pain is distant from both the involved muscle and the trigger point. Virtually identical patterns were reported by Sola and Kuitert,⁴ Kellgren,⁵ and Travell and Rinzler.⁸ (Adapted from Travell and Simons.⁹)

participate and 12 did not speak English—leaving a study group of 172. The mean age of the patients was 53.5 ± 18.2 (1 standard deviation) years and 69% were women. The primary insurance coverage of the sample varied: 34% were covered by private insurance, 36% by Medicare, 23% by Medicaid (Medi-Cal), and 7% by other programs.

Of the 172 patients, 54 (31%) said that the reason for their visit included pain, with 23 reporting that pain was the primary reason and 31 including pain and some other reason.

Of patients with pain, 16 (30%; 95% confidence interval, 19% to 43%) fulfilled our criteria for myofascial pain, and 38 (70%) had pain due to other conditions (Table 1). Seven patients did not have a cause for their pain determined during the study interview and are listed as "not determined."

The age and sex were similar in the patients without pain (mean age, 54.3 ± 18.14 years, 68% female), patients with nonmyofascial pain (mean age, 51.5 ± 19.33 years, 68% female), and the patients with myofascial pain only (mean age, 52.2 ± 16.4 years, 75% female); for age, $F(2 \text{ degrees of freedom}) = 0.37, P = .69$; for sex, $\chi^2(2 \text{ df}) = 0.34, P = .84$.

The mean usual pain intensity as measured by a visual analog scale was high and somewhat greater for patients with myofascial pain as compared with patients with other causes of pain (51.25 ± 23.8 versus 42.9 ± 22.3). The observed difference in mean pain intensities by the visual analog scale is 8.35 units higher for the myofascial pain patients (95% confidence interval, 22.24 to -5.54 units). Because of the high baseline value, a difference of -5.54 visual analog scale units between groups would not be clinically significant. These data suggest that the mean pain intensity of myofascial pain is comparable to, or possibly greater than, pain due to other causes.

Almost half (23/54) of patients presenting with pain said that pain was the only reason for their visit. Pain was the only reason for 7 (44%) of 16 patients found to have myofascial pain and 16 (42%) of 38 patients with pain of other causes.

The duration of myofascial pain varied: four patients (25%) had pain for a month or less, three patients (19%) had pain for 1 to 6 months, four (25%) patients had pain 6 to 12 months, and five (31%) reported pain for more than a year.

Of 22 patients with complaints of upper body pain—headache, head pain, neck, shoulder, upper back—13 had myo-

fascial pain compared with 3 of 29 with pain located elsewhere (Fisher's exact test, $P < .0003$). Complaints of lower back pain were uncommon, reported by only three (6%) patients with pain.

The 16 patients with myofascial pain had the following pain complaints and muscles harboring the active trigger points: three "headache" (3 sternocleidomastoid), five "neck" or "shoulder" pain (3 infraspinatus, 1 sternocleidomastoid, 1 levator scapulae), five "upper back" pain (3 middle trapezius, 1 scalene, 1 upper paraspinal), two "low back" pain (2 lower paraspinal), and one "chest" pain (1 oblique).

We treated 14 patients specifically for myofascial pain (2 patients refused treatment), 12 with the stretch-and-spray technique, and two with trigger point injections. In these 14 patients with myofascial pain, the mean pain intensities assessed in visual analog scale units decreased significantly from 54.7 (pretreatment) to 26.1 (posttreatment; paired differences t test, $P < .001$). Only two patients had such treatments initiated by their primary care provider.

Illustrative case. The patient, a 48-year-old man, was seen for a new patient evaluation of intermittent anterior shoulder pain for three to four months, worsened by travel. The sole reason for his visit was this pain. His past history was noncontributory. On examination he had an active trigger point in the infraspinatus muscle (Figure 1) that reproduced his anterior shoulder pain. Stretch-and-spray therapy reduced the pain intensity from 64 to 31 as assessed by the visual analog scale. Following this initial treatment, the patient was informed of the reason for his pain and given a home stretching program.

All patients with myofascial pain have been followed up a median of 16 months (range, 7 to 24) by chart review except for three patients who were observed for only a month. No other cause of pain has been diagnosed in these patients.

Discussion

By investigating regional pain complaints, we made the clinical diagnosis of myofascial pain in nearly 30% of patients with pain seen. Thus, in our setting, the prevalence of the myofascial pain syndrome was high, and it represented the single most common reason for the study patients with pain to visit their physician.

We think our estimate of myofascial pain prevalence is valid and that it does not suffer from reporting bias as the patients, rather than the physicians, identified pain as the reason for the visit. We also used specific criteria for the clinical diagnosis of referred myofascial pain.

We found the predominant pain complaint in the patients with myofascial pain could be ascribed to a single muscle. For example, many patients with shoulder pain had this complaint as the result of an active trigger point in the infraspinatus muscle. This finding supports the notion that the myofascial pain syndrome can be viewed as a process related to individual muscles.

We had no difficulty in relating pain symptoms to published maps of referred pain patterns and then locating active trigger points in muscle. We also found that suggested therapies were effective immediately and that during 16 months of follow-up, no other cause of pain was noted in the medical record. Thus, despite the fact that the syndrome of myofascial pain remains somewhat controversial,^{17,20} our data suggest that the myofascial pain syndrome is relevant to primary

TABLE 1.—Reason for Visit and Cause of Pain Complaint

| | Patients, No. |
|--------------------------------------|---------------|
| Reason for Visit (n=172) | |
| Pain | 23 |
| Some other reason | 118 |
| Pain and some other reason | 31 |
| Cause of Pain Complaint (n=54) | |
| Myofascial pain | 16 |
| Other causes | 38 |
| Gastrointestinal | 7 |
| Infection* | 7 |
| Arthritis | 5 |
| Angina | 3 |
| Neuropathy | 3 |
| Other† | 6 |
| Not determined | 7 |

*Includes cystitis (2), pharyngitis (2), cellulitis, bronchitis, and herpes zoster.
†Includes 1 each benign tongue lesion, bone contusion, cervical stenosis, costochondritis, and 2 wound site pain.

care internal medicine. Additional studies of prevalence in other general internal medicine settings should be done to validate our findings.

Myofascial pain appears to be a clinically important problem. In addition to the high prevalence, 75% of our myofascial pain patients reported symptoms for at least a month, and the mean intensity of their pain, as assessed by the visual analog scale, was comparable to or possibly greater than the intensity of other pain complaints that brought study patients to see their physicians. Finally, 44% of the myofascial pain patients reported that pain was the only reason for their visit.

Some of our study patients may have had pain for relatively long periods of time because of a poor recognition of the myofascial pain syndrome. Only one primary care provider caring for two of the study patients correctly determined the nature of the patients' pain complaints and initiated specific therapy.

We were surprised by the relatively infrequent complaint of "low back" pain. In a national study of ambulatory pain,³⁸ the most common pain complaint was low back pain; that study, however, relied on a physician, not the patient, to record the reason for the visit. Our findings may differ because patients identified not only pain as the reason for their visit but also the specific painful area to be examined. Because we asked for the reason for the visit to the physician that day, patients may have preferentially indicated important pain or previously unexplained pain.

The recommended treatment of myofascial pain includes identifying and correcting perpetuating factors, the use of physical therapy, a home stretching program,²⁶ and stretch-and-spray and trigger point injections.³⁶ Additional studies of treatment with long-term follow-up are needed, however. Although the primary purpose of our study was to determine the prevalence and clinical features of myofascial pain in our practice, we were also interested to see if commonly suggested therapies would be useful in our subjects. Treatment did provide some immediate relief, and the amount of relief obtained was similar in magnitude to that of other reports.¹³

The prevalence, severity, and duration of myofascial pain syndromes observed in this study suggest that this may be an important cause of regional pain complaints in patients seeking primary care from internists. Additional research is needed to more fully characterize this syndrome.

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