

Overlooked Physical Diagnoses in Chronic Pain Patients Involved in Litigation, Part 2

The Addition of MRI, Nerve Blocks, 3-D CT, and Qualitative Flow Meter

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This study followed 120 chronic pain patients referred to a multidisciplinary pain center. The referral diagnosis for many patients, such as "chronic pain," "psychogenic pain," or "lumbar strain," was frequently found to be incomplete or inaccurate (40%) following a multidisciplinary evaluation that used appropriate diagnostic studies, including magnetic resonance imaging, computed tomography, nerve blocks, and qualitative flowmeter. Significant abnormalities were discovered in 76% of the diagnostic tests. An organic origin for pain was found in 98% of these patients. The patients were discharged with objective verification of diagnoses including facet disease, nerve entrapment, temporomandibular joint disease, thoracic outlet syndrome, and herniated discs.

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Reports of incomplete diagnosis in patients with concurrent pain and psychiatric illness abound in the literature.¹⁻⁵ These patients frequently receive diagnoses such as "chronic pain," "muscle strain," and "lumbosacral strain" when physicians fail to identify organic pathology as an etiology. Other diagnoses ascribe the pain entirely to the patient's mind, dismissing the possibility of organic pathology.⁶⁻⁸

However, chronic pain patients have generally sustained some serious injury.⁹ While the diagnosis of "muscle strain" may be appropriate during the 4 to 6 weeks that it takes for a muscle strain to heal,⁷ it poorly explains the chronic pain and impairment that can persist for years after an injury. Unfortunately, the psychiatric abnormalities that are the normal response to

chronic pain⁷ tend to bias many physicians, resulting in less than extensive evaluations.¹⁰ This physician bias is often compounded by factors such as litigation^{6,11} and an additional negative bias against women with pain complaints.¹² These factors combine to produce

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incomplete diagnoses that perpetuate the patients' disabilities and pain.

In addition, psychiatric concepts, such as conversion reactions, depressive equivalents,¹³ and Briquet syndrome,⁶ offer convenient non-medical diagnoses that exclude a physical origin of a patient's pain complaint. This approach erroneously assumes that a dichotomy exists when dealing with physical disease and psychiatric disorders, so that a clinician diagnoses either an organic disorder or a psychiatric problem. The DSM-III has advanced the all-important concept that the patient may have the psychiatric and medical problems coincidentally.¹⁴ This notion has been embodied in the Mensana Clinic Pain Test.¹⁵ This assessment tool determines the validity of a pain complaint regardless of preexisting or coexisting personality disorders and/or psychiatric illness.^{12,13,16,18}

In a previously published report,¹⁷ Hendler and Kozikowski described overlooked diagnoses in 60 chronic pain patients who were involved in litigation. This study was conducted between 1982 and 1985, before the common use of magnetic resonance imaging (MRI), nerve blocks, three-dimensional computed tomography (3-D CT), and quantitative flowmeter (QFM) studies. QFM is a physiologic measurement of blood-flow velocity determined by Doppler measurements of arterial flow differences with position change. It has proved useful in diagnosing thoracic outlet syndrome and subclavian steal. The accuracy of flow meter measurements ranged from 93% to 97% in a study that evaluated its clinical applicability.¹⁸

Though 70% of the ordered tests revealed abnormal findings, almost 66.7% of the patients had been referred with incomplete diagnoses such as chronic pain of unknown etiology, psychogenic pain/no diagnosis, or muscle strain. In addition, there were twice the number of diagnoses at discharge than there were at referral, suggesting that multiple diagnoses were not considered by the referring physicians. It was established that a multidisciplinary approach to the diagnosis of chronic pain pathology is far superior to the subjective opinion of the referring physician.

The present study investigated 120 chronic

pain patients between 1985 and 1989. During this period, facet and nerve-root blocks, 3-D CT, and QFM were in common usage. These additional tests helped to objectively confirm clinical impressions and validate patients' complaints. Three-dimensionally reconstructed CT images have been shown to be particularly valuable adjuncts in the evaluation of difficult-to-diagnose patients with chronic back pain.¹⁹

As in the first study,¹⁷ the patient demographics were examined and the laboratory methods of diagnosis were tabulated, so that the tests that most frequently yielded significant abnormalities were identified. Another tabulation was made consisting of the types and frequencies of referral, admission, and discharge diagnoses. From these tabulations, the most common inaccurate diagnoses at referral, as well as the most common diagnoses confirmed at discharge, were identified.

METHODS

A patient population of 120 subjects was selected from a pool of 248 inpatients at the Mensana Clinic during the period between March 1985 and February 1989. The criteria for patient selection included a chief complaint of chronic pain in the back, buttocks, leg, shoulder, arm, neck, (or a combination of the above) for at least 1 year. Complete medical charts, including psychological testing, laboratory results, and clinical reports from consulting physicians, were required. Finally, patients had to be involved in active litigation (worker's compensation or auto accident) relating directly to the origin of their pain. Patient demographics are listed in Table 1. As part of the Mensana Clinic's program, all patients were fully evaluated by the clinical director and were later admitted to the clinic for a multidisciplinary investigation of their pain complaints. Once admitted, the patients were medically evaluated and received counseling. The clinical director saw them daily. The program also involved five biofeedback and five group therapy sessions per week. In addition, the patients were referred to a variety of medical specialists from the faculties of Johns Hopkins

TABLE 1. Demographics of 120 consecutive chronic pain patients

Demographic Variable	Mean	Range
Age, years	39.0	17 - 70
IQ	93.6	75 - 121
Education, years	12.9	7 - 18
Duration of pain, years	3.63	0.1 - 30.3
Age of most recent injury at admission, years	3.43	0.2 - 17.9
Surgeries prior to admission, number	3.6	0 - 9
Length of stay at clinic, days	26.9	1 - 77

University School of Medicine and the University of Maryland School of Medicine for evaluation and diagnostic testing. The mean number of referrals was 3.62 (range: 2-9). A battery of psychological tests was administered routinely, and psychotherapy and physical therapy were prescribed as needed.

Laboratory and diagnostic tests were done at area hospitals or laboratories and included the following: MRI, 3-D CT, QFM, thermography, electromyogram (EMG), nerve conduction velocity (NCV), CT, X rays (including flexion-extension), bone scan, myelogram, gallium scan, and blood studies. It is significant to note that the Mensana Clinic receives no financial gain from testing. To evaluate the findings from the laboratory testing in a clinically consistent manner, abnormalities were tabulated and categorized as 1) none present, 2) mild, or 3) moderate-to-severe, based on qualitative and quantitative interpretations (Table 2).

Three diagnoses were given each patient at 1) referral, 2) admission, and 3) discharge. At the time of each diagnosis, differentiation between those that were definite and those that were rule-out (likely but not certain) were conducted and recorded. The referral diagnosis was made before the patient's admission to the clinic. Upon admission, the clinical director evaluated the patients and made preliminary diagnoses. These were independently evaluated by Dr. Donlin Long, M.D., Ph.D., who is professor and chairman of the Department of Neurosurgery at

Johns Hopkins. After the complete multidisciplinary investigation described earlier, usually a period from 2 to 4 weeks, final diagnoses were established. Seventy-two diagnoses were used. A complete table of the distribution of diagnoses over referral, admission, and discharge phases is available from the authors.

A comparison was made between the most incomplete, or inaccurate, diagnoses at referral with the diagnoses at discharge. These are presented in Table 3. The most common diagnoses missed at referral were compared with their presence at discharge. These are presented in Table 4.

Because the study is a continuation of an earlier investigation,¹⁷ which covered a period before the common use of MRI, QFM, and facet and root blocks, comparative references are made between these two studies in Table 5. Referral patterns were consistent for these two studies, and there were no statistically significant differences between the samples. This finding demonstrates the significance of these diagnostic tools for chronic pain conditions and emphasizes their potential role in the overall multidisciplinary approach for evaluating chronic pain.

RESULTS

As shown in Table 1, the average patient was a high school graduate and middle-aged (mean age: 39.0 years). The mean ages of the men and women were 61 and 59, respectively. Eighteen were single, 77 were married, and 25 were separated or divorced. Eighteen subjects were employed; 120 were unemployed. Litigation status was as follows: worker's compensation cases = 18, motor vehicle accident cases = 39. There was no significant difference between patient demographics for the first study¹⁷ and this one. Before clinic admission, the average length of time that the patients had endured pain was 3.63 years. They had undergone an average of 2.4 surgeries, which resulted in an average stay of 26.9 days at the clinic.

As shown in Table 2, 884 diagnostic tests were ordered for the 120 study patients. Of these, 669(76%) revealed abnormal findings;

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TABLE 2. Distribution of test results based on severity of abnormality

Studies	Number of Patients Tested	Abnormality		
		None	Mild	Moderate-Severe
Thermography	74	13	10	51
Bone scan	87	37	24	26
Computed tomography scan	81	16	18	47
3-D computed tomography scan ^a	75	23	11	41
Magnetic resonance imaging	87	16	11	60
Myelogram	48	40	4	30
Flexion-extension X rays	83	21	30	32
Electromyogram	105	14	7	84
Nerve conduction velocity	104	22	8	74
Qualitative flowmeter ^a	34	10	4	20
Facet blocks ^a	41	8	3	30
Nerve blocks ^a	23	3	5	15
Root blocks ^a	8	0	2	6
Gallium scan ^a	22	15	5	2
Tomograms	10	3	1	6
Discograms/arth	2	0	0	2

^aMost recent studies conducted.

143(16%) revealed mild abnormalities; and 526(60%) revealed moderate-to-severe findings. The remaining 215(24%) showed normal impressions. The tests that most often revealed some abnormality (mild, moderate, or severe) in decreasing order of frequency were as follows: EMG = 91/105 (87%), nerve blocks = 61/72 (85%) collectively, MRI = 71/87 (82%), thermography = 61/74 (82%), CT scan = 65/81 (80%), NCV = 82/104 (79%), flexion-extension X rays = 62/83 (75%), myelogram = 34/48 (71%), QFM = 24/34 (71%), and 3-D CT = 52/75 (69%).

Even more significant is the percentage of moderate-to-severe findings that emerged from the total percentage of abnormalities, indicating the reliability and efficiency of the tests when coupled with the actual physical findings. The percentage of moderate-to-severe findings with the tests were as follows: EMG 92%, NCV 90%, myelogram 89%, MRI and thermogram 84%, QFM 83%, nerve blocks 80% (collectively), 3-D CT 79%, and CT 72%.

Referral and discharge diagnoses are presented in Table 3. The total number of diagnoses (certain plus rule-out) at referral was 173. This

number increased over twofold to 382 at admission. This figure increased an additional 1.5 times more, to 568, at discharge, which represents an overall increase in discharge diagnoses to 3.8 times the number at referral.

As shown in Table 3, 35/120 (30%) patients were referred with the vague diagnoses of "chronic pain/unknown etiology" or "psychiatric pain/no diagnosis," whereas 13/120 (10%) of the patients were referred with the diagnosis of "lumbar or cervical strain." As a result, a total of 48 of 120 patients (40%) had been assigned incomplete or inaccurate diagnoses at referral. At discharge, only one case remained. In sum, 47 of the 48 patients who arrived at the clinic with vague diagnoses were discharged with a complete and accurate diagnosis of their pain. They were therefore able to be referred for appropriate treatment.

Facet disease had been missed by the referring physician in 38 of 40 patients (95%). Other disorders commonly missed at referral were the following: nerve entrapment, 87%; temporomandibular joint (TMJ) pain, 86%; thoracic outlet syndrome, 84%; spinal stenosis,

TABLE 3. The most common incomplete or inaccurate diagnoses at referral

Diagnosis	Cases at Referral	Cases at Discharge
Chronic pain: unknown etiology	24	0
Cervical/lumbar/sacral pain	13	1
No diagnosis/psychogenic pain	11	0
Reflex sympathetic dystrophy	6	3

TABLE 4. The most common diagnoses missed at referral

Diagnosis	Presence at Referral	Presence at Discharge
Herniated disc	11	37
Bulging disc	4	14
Degenerative disc disease	8	28
Radiculopathy	17	55
Facet disease	2	40
Foraminal stenosis	3	17
Spinal stenosis	2	12
Myofascial disease	8	47
Rib tip syndrome	0	8
Temporomandibular joint syndrome	4	28
Thoracic outlet syndrome	6	38
Carpal tunnel syndrome	0	10
Nerve entrapment	4	30
Occipital neuralgia	1	8
Reactive depression	5	61

83%, radiculopathy, 76%; bulging and degenerative discs, 71%; and herniated discs, 70%. Table 4 presents the entire list of commonly missed diagnoses.

DISCUSSION

The categorization and tabulation of the diagnostic tests demonstrated several points. There has been a shift in the discharge diagnoses from the 1982–1985 period as compared with the 1985–1989 period (Table 5). With the advent of newer and more accurate diagnostic studies, more precise diagnoses have replaced the difficult-to-document diagnosis of myofascial syndrome and the overly used diagnoses of spinal stenosis and nerve entrapment. By doubling the sample size from 60 in the first study to 120 in the second study, one would expect a corresponding twofold ($\times 2.0$) increase in the incidence of each discharge diagnosis. In actuality, our results were widely distributed.

The relative reduction in the diagnosis of myofascial syndrome was one of the more striking findings. To a lesser extent, spinal stenosis and nerve entrapment also decreased in incidence relative to the patient samples.

The more precise diagnoses include the following: TMJ, which increased by a factor of 9.3; thoracic outlet syndrome by a factor of 4.8; bulging disc by a factor of 4.7; herniated disc by a factor of 3.7; radiculopathy by a factor of

TABLE 5. Comparative incidence of discharge diagnoses

Diagnosis	1982–1985 Study (N = 60)	1985–1989 Study (N = 120)	Factor of Change (N = 2 \times)
Temporomandibular joint syndrome	3	28	$\times 9.3$
Thoracic outlet syndrome	8	38	$\times 4.8$
Bulging disc	3	14	$\times 4.7$
Herniated disc	10	37	$\times 3.7$
Radiculopathy	22	50	$\times 2.3$
Degenerative disc	13	28	$\times 2.2$
Facet disease	22	40	$\times 1.8$
Spinal stenosis	7	12	$\times 1.7$
Nerve entrapment	19	30	$\times 1.6$
Myofascial disease	36	47	$\times 1.3$

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2.3; and degenerative disc disease by a factor of 2.2. With the exception of thoracic outlet syndrome, all of these diagnoses were also among the list of diagnoses most commonly missed by the referring physicians (Table 4). In addition, all but thoracic outlet syndrome and radiculopathy can be directly detected by MRI. This is not surprising considering that MRI revealed a significantly high level of abnormalities, 82% of which were indicated to be in the moderate-to-severe range in this study. The accuracy and successful use of MRI as a diagnostic tool has also been widely confirmed in the literature.²⁰⁻²⁴

MRI, though objective, cannot be considered a "gold standard" tool in chronic pain diagnosis. A recent report demonstrated coincidental abnormal findings in 98 asymptomatic persons.²⁵ This study supports the assumption that physiologic tests can aid in the discrimination of the significance of abnormal MRI findings.

Another significant finding involves pre-1985 tests such as the EMG and NCV. These show a marked increase in abnormal findings. Abnormal EMG findings rose from 60% to 87%. The percentage for NCV rose from 60% to 79%. This increase was attributed to refined technique.

The Mensana Pain Test (MPT) was shown to be an excellent discriminator in this sample. Based on MPT results, 81% of the patients were classified as objective pain patients (score less than 17), 17% were categorized as mixed objective/exaggerating (MPT score of 18-20), and only 2% scored just into the exaggeration range (MPT score of 21 or greater). None of the patients scoring higher than 29, which implies affective/psychogenic pain origin, revealed any organic pathology on their diagnostic tests. Considering these numbers, it can be concluded that 98% of the patients had an organic origin for their pain complaints. In addition, 94.2% of the truly objective pain patients had demonstrated a marked physical abnormality responsible for their pain. It is evident from these figures, that without a thorough diagnostic evaluation, the label of "psychogenic pain" could be misapplied to an inadequately diagnosed patient, creating a self-fulfilling prophecy.

In an era of health care cost containment, the benefits of testing must outweigh the expenditures. Even if the cost of human suffering is not considered, the cost of loss of employability because of a misdiagnosis must be. This cost is a major argument for such testing. The cost of back pain alone accounts for 30% of the workplace injuries, or about \$10.5 billion per year for worker's compensation.²⁶

McGill reported that if an injured employee was out of work more than 2 years, the chance of his or her returning to work was "nil."²⁷ Other research has supported this claim.³¹

Mainly because of these tremendous costs, predicting a patient's return to work after pain center treatment has become a focus of much research.²⁹⁻³¹ Cutler et al. reviewed the literature on return to work as an outcome variable for chronic pain center treatment. Change in employment status at follow-up was significant for all groups examined. Comparisons for work outcome between treated and untreated groups was significant. The mean difference in employment at follow-up for treated patients vs. those not treated was about 50%. The percentage of patients working increased from 20% to 54% at posttreatment of chronic pain. These researchers concluded that chronic pain treatment does return patients to work, and the benefits of treatments are permanent.³² The return-to-work rate for patients treated at the Mensana Clinic was 19.5% for worker's compensation cases and 62.5% for auto accident cases, even though these patients had been out of work for an average of 4.9 years.¹⁰

CONCLUSION

Improved diagnostic accuracy, with the introduction of new testing, including MRI, nerve blocks, 3-D CT, and QFM, resulted in the accurate diagnosis of 47 out of 48 patients who were referred to a multidisciplinary diagnostic clinic with an incomplete or inaccurate diagnosis. These patients made up 40% of the total patient sample in this study. Most of these patients had been in pain 1 to 30 years (mean: 4 years)—without effective treatment.

As noted in the prior studies, incomplete diagnoses may have been attributable to physicians' overall bias with respect to seemingly psychogenic conditions, and their aversion to patients involved in litigation.^{6,112} Poor communication on the part of the patients, as well as constraints on testing imposed by insurance carriers, are also potential contributing factors. The result is that patients were underdiagnosed because physicians did not use diagnostic tools readily available to them. As a result of improved testing, the patients were discharged with nearly four times the number of diagnoses than with which they were referred. This represents a 100% increase over the previous study we reported on in a prior issue of *Psychosomatics*.¹⁷

The incomplete diagnosis of chronic pain is frustrating to both physicians and patients. In addition, it is costly to patients, employers, and third-party payers. Psychological and legal factors complicate the matter, and many physicians feel inadequately trained to manage such cases.³² In a study done with a similar group of chronic pain patients, Talo *et al.*¹¹ investigated the patients' involvement in active or completed litigation as a result of either worker's compensation or automobile accidents. There were no differences in psychological factors, type of diagnosis, use of medication, or referral to surgery. Only the type of litigation influenced return-to-work rates, with worker's compensation patients returning at a significantly lower rate than those involved in automobile accidents. Since financial settlements are usually lower for worker's compensation injuries than for automobile accidents, financial gain would appear to be less of a factor than worker's compensation laws, which prevent trial employment. However, the litigation aspect of the cases may have prevented the referring doctors from ordering diagnostic studies. This may be because of the physicians' usual aversion of patients involved in litigation³³ or authorization denial from insurance carriers for recommended tests. An instrument such as the MPT can help eliminate the subjectivity.

A number of pain treatment centers have reported success in their treatment of chronic pain patients, to the extent that their patients report at least some subjective improvement in pain.^{28,34-36} Some of these pain treatment centers use a multidisciplinary approach, combining traditional methods of medical care with psychological and social support.³⁷⁻⁴⁰

No one clinician can know all there is to know about pain. For this reason, patients at the Mensana Clinic see an average of 3.62 specialists (range: 2-9) during an admission, which include surgeons, orthopedic surgeons, anesthesiologists, thoracic surgeons, rheumatologists, neurologists, internists, psychologists, psychiatrists, physiatrists, otolaryngologists, endocrinologists, oral surgeons, dentists, plastic surgeons, and radiologists. Like blind men examining an elephant, each consultant describes his or her piece of the puzzle, which is then synthesized into a diagnosis by the clinical director. The results of this approach have been described in this article. The Mensana Clinic advocates a multidisciplinary approach that emphasizes the improved diagnostic accuracy provided by a multispecialty team. Perhaps the admonition made by Thibault is worth emphasizing: "The first step in making a diagnosis is to think of it."⁴⁰ The solo clinician, who does not have the benefit of consultations, has to rely exclusively on his or her knowledge and experiences. However, "discarding discordant data, trying too hard to make a favored diagnosis fit, and refusing to let go of the assigned diagnoses are all diagnostic traps in which even a seasoned clinician can tumble."⁴⁰

By using an appropriate psychological test to validate a patient's pain complaint, unnecessary diagnostic testing can be reduced or perhaps eliminated, thereby further reducing the overall financial and human costs to patients, employers, and third-party payers. With appropriate screening and testing, chronic pain patients with potentially correctable anatomic or physiologic disorders can be identified, treated, and returned to a productive life-style.

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References

1. Cohen-Cole SA, Friedman CP: The language problem: integration of psychosocial variables into medical care. *Psychosomatics* 1983; 24:54-60
2. Hall RCW, Beresford TP: The psychosocial aspects of medicine. *Psychiatric Medicine* 1983; 1:111-119
3. Hall RCW, Beresford TP: Physical illness in psychiatric patients: areas of inquiry. *Psychiatric Medicine* 1984; 2:401-415
4. Schaub JJ: Psychiatric illness in medical patients: why it goes undiagnosed. *Psychosomatics* 1982; 23:225-229
5. Shelp EE, Perl M: Missed physical diagnosis: conceptual and moral comments on the psychiatrist-patient relationship. *Psychiatric Medicine* 1984; 2:389-400
6. Hendler NH: *Diagnosis and Nonsurgical Management of Chronic Pain*. New York, Raven Press, 1981
7. Hendler NH: Depression caused by chronic pain. *J Clin Psychiatry* 1984; 45:30-36
8. Hendler NH, Uematsu S, Long DM: Thermographic validation of physical complaints in psychogenic pain patients. *Psychosomatics* 1984; 25:654-660
9. Wells KB, Golding JM, Burnam MA: Psychiatric disorder and limitations in physical functioning in a sample of the Los Angeles general population. *Am J Psychiatry* 1984; 145:712-717
10. Hendler NH: Validating and treating the complaint of chronic back pain: The Mensana Clinic Approach, in *Clinical Neurosurgery*, edited by Black P. Baltimore, MD, William & Wilkins, 1989, pp. 385-397
11. Talo S, Hendler NH, Brodie J: Effects of active and completed litigation on treatment results: worker's compensation patients compared with other litigation patients. *Journal of Occupational Medicine* 1989; 31:265-270
12. Hendler N, Mollett A, Talo S, et al: A comparison between the MMPI and the "Mensana Clinic Back Pain Test" for validating the complaint of chronic pain. *Journal of Occupational Medicine* 1988; 30:98-102
13. Hendler NH: Conversion—the unconscious mind, in *Diagnosis and Nonsurgical Management of Chronic Pain*, edited by Minor AF. New York, Raven Press, 1981, pp. 71-78
14. American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders*, 3rd Edition. Washington, DC, American Psychiatric Association, 1980, p. 246
15. Hendler NH, Viernstein M, Gucer P, et al: A preoperative screening test for chronic back pain patients. *Psychosomatics* 1979; 20:80-88
16. Hendler NH, Viernstein M, Schroeder D, et al: A comparison between the MMPI and the "Hendler Back Pain Test" for validating the complaint of chronic back pain in men. *J Orthoped Med Surg* 1985; 6:333-337
17. Hendler NH, Kozikowski JG: Overlooked physical diagnoses in chronic pain patients with litigation. *Psychosomatics* 1993; 34:494-501
18. Uematsu S, Yang A, Preziosi TJ, et al: Measurement of carotid blood flow in man and its clinical application. *Stroke* 1983; 14:256-266
19. Hendler N, Zinreich J, Kozikowski JG: Three-dimensional CT validation of physical complaints in "psychogenic pain" patients. *Psychosomatics* 1993; 34:90-95
20. Helweg-Larsen S, Wagner A, Kjaer L, et al: Comparison of myelography combined with thoracic spine CT and MRI in suspected metastatic disease of the spinal canal. *J Neurooncol* 1992; 13:231-237
21. Larson EM: Magnetic Resonance Imaging of the cervical and thoracic spine and spinal cord. *Acta Radiol* 1989; 37:71-92
22. Bozzao A, Gallucci M, Maschiocchi C, et al: Lumbar disk herniation: MR imaging assessment of natural history in patients without surgery. *Radiology* 1992; 185:134-141
23. Yoshino MT, Seeger JF, Carmody RD: MRI diagnosis of thoracic ossification of posterior longitudinal ligament with concomitant disc herniation. *Neuroradiology* 1991; 33:455-457
24. Perneczky G, Bock FW, Neuhold A, et al: Diagnosis of cervical disc disease: MRI versus cervical myelography. *Acta Neurochirurgica* 1992; 116:44-48
25. Jensen MC, Brant-Zawadzki MN, Obuchowski N: Magnetic resonance imaging of the lumbar spine in people without back pain. *N Engl J Med* 1994; 331:69-73
26. Health Insurance Association of America: *HIAA Source Book of Insurance Data*, 1995, pp. 151-156
27. McGill JC, Lawlis GF, Selby D, et al: Industrial back problems—a control program. *Journal of Occupational Medicine* 1968; 10:174-178
28. Snook S, Jensen RC: *Costs, in Occupation Low Back Pain*, edited by Pope M, Grymoyer J, Andersson G. New York, Praeger, 1984, pp. 115-121
29. Fishbain DA, Rosomoff HL, Goldberg M, et al: The prediction of return to the workplace after multidisciplinary pain center treatment. *Clin J Pain* 1993; 9:3-15
30. Abdel-Moty E, Fishbain DA, Khalil TM, et al: Functional capacity and residual functional capacity and their utility in measuring work capacity. *Clin J Pain* 1993; 9:168-173
31. Fishbain DA, Abdel-Moty E, Cutler R, et al: Measuring residual functional capacity in chronic low back pain patients based on the Dictionary of Occupational Titles. *Spine* 1994; 19:872-880
32. Cutler RB, Fishbain DA, Rosomoff HL, et al: Does nonsurgical pain center treatment of chronic pain return patients to work? A review and meta-analysis of the literature. *Spine* 1994; 19:643-652
33. Tearnan B, Cleland C: The attitudes of physicians toward chronic pain patients. *Pain Management* 1988; July/August:178-183
34. Maruta T, Swanson DW, Swenson WM: Chronic pain: which patients may a pain management program help. *Pain* 1979; 7:321-329
35. Painter JR, Seres JL, Newman RJ: Assessing benefit of

- the pain center: why some patients regress. *Pain* 1980; 8:101-113
36. Roberts AH, Reinhardt L: The behavioral management of chronic pain: long-term follow-up with a comparison group. *Pain* 1980; 8:151-162
37. Hallet EC, Pilowski I: The response to treatment in a multidisciplinary pain clinic. *Pain* 1982; 12:365-374
38. Kleinke CL, Spangler AS: Predicting treatment outcome of chronic back pain patients in a multidisciplinary pain clinic: methodological issues and treatment implications. *Pain* 1988; 33:41-48
39. Philips HC: Changing chronic pain experience. *Pain* 1988; 32:165-172
40. Thibault GE: Clinical problem solving: failure to resolve a diagnostic inconsistency. *N Engl J Med* 1992; 327:36-39



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SECOND PLACE

"Overlooked Physical Diagnoses in Chronic Pain Patients Involved in Litigation, Part 2"

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