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The Chest Pain of Ankylosing Spondylitis

Its Place in the Differential Diagnosis of Heart Pain

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FREQUENTLY, in the examination of patients with suspected angina pectoris, a carefully taken history establishes that chest pain is not cardiac but probably of musculoskeletal origin. Disease of the spine has been well publicized as a source of anterior chest pain. Most references have emphasized degenerative disease of the spine (hypertrophic arthritis, osteoarthritis, spondylarthrosis). More recently attention has been focused upon cervical radiculitis as a particular manifestation of degenerative spinal disease, in which the pain distribution may include the upper chest. In contrast, ankylosing spondylitis, the principal inflammatory disease of the spine, has received no attention in publications dealing with chest pain (1-8), with but few exceptions (9-10). In the literature of ankylosing spondylitis, thoracic symptoms are recognized (11-14), but knowledge of this experience has not been adequately disseminated. As an entity, ankylosing spondylitis has only comparatively recently come of age, separable, on the one hand, from degenerative disease by radiological and clinical criteria and, on the other hand, from rheumatoid arthritis by careful study of certain differences in the distribu-

tion and progression of joint involvement (15) and lack of association with the rheumatoid factor (16). The plethora of synonyms (spondylitis rhizomelique, pelve spondylitis ossificans, spondylitis deformans, atrophic spondylitis, Marie Strumpell's disease, von Bechterew's syndrome) has been cleared by the increasing international preference for the term ankylosing spondylitis. The term rheumatoid spondylitis was adopted by the American Rheumatism Association in 1941, and is used in the United States interchangeably with ankylosing spondylitis.

This report was prompted by the diagnosis of ankylosing spondylitis in 4 patients admitted because of unexplained chest pain to the Ann Arbor Veterans Administration Hospital within a 12 months' period. It is felt that these case histories and a review of chest pain encountered in 50 patients with proved ankylosing spondylitis would be of value to physicians involved with the recognition and treatment of heart disease.

CASE REPORTS

CASE 1 (A-8463)

A 36-year-old police officer was admitted in 1961, because of suspected angina pectoris. In 1959, he had noted the onset of left anterior chest pain, described as a steady, burning, boring sensation, overlying the fourth, fifth, and sixth ribs. The anterior pain was accompanied by a mild, dull, back pain in the left paravertebral area at the level of the third to sixth dorsal vertebrae (Figure 1). The pains occasionally became sharp and stabbing during deep inspiration and hyperextension of the back. The duration of the attacks varied from a few seconds to 2 hours. The pain was no

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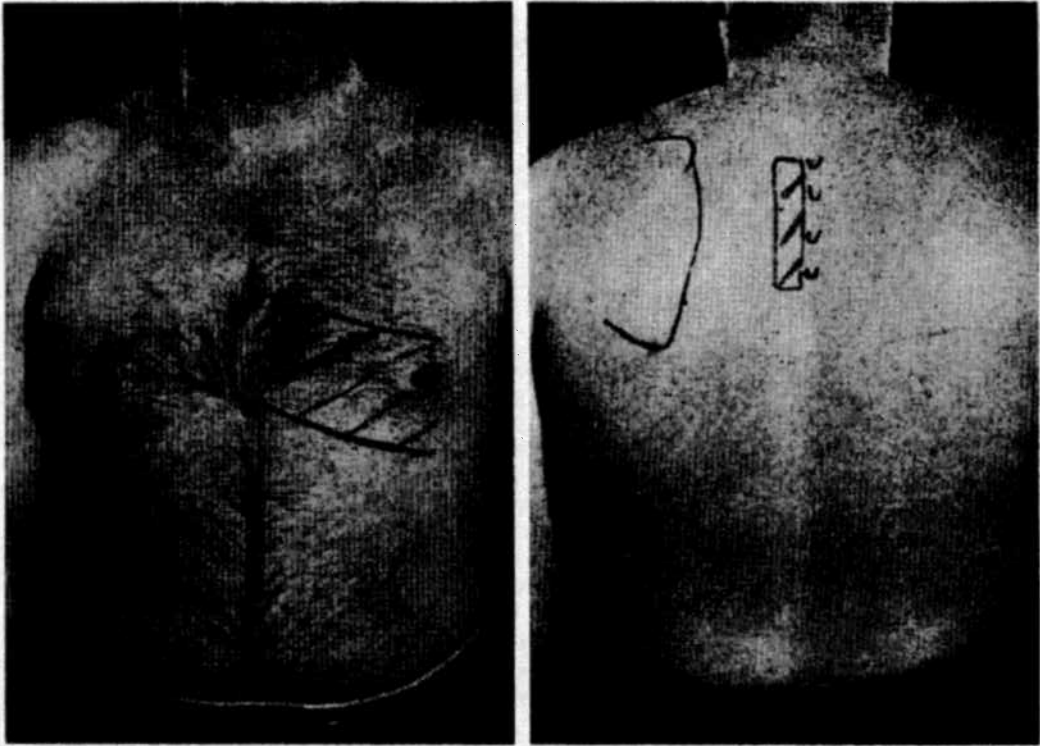


FIGURE 1 (case 1). Separate areas of anterior and posterior pain present simultaneously.

precipitated by exertion. Attacks occasionally awakened the patient at night.

Numerous electrocardiograms had been obtained. Nitroglycerine had been prescribed without effect after a recent outside tracing showed slight ST segment changes.

The past history revealed that in 1946 during Army service the patient had abrupt onset of lassitude, fever, and pain over the sacrum, followed within 2 weeks by swelling of the knees and hands. At that time he was hospitalized for several months and received a course of roentgen irradiation over the lower back. Since then the patient had had very mild chronic lumbar pain, morning stiffness lasting 20 minutes, and pain over the posterior aspect of the heels. Nocturnal back pain had awakened him frequently until he began to use a firm mattress. Except for a brief attack of swelling of the knees in 1947, there had been no recurrence of symptoms in the peripheral joints.

Examination disclosed a slightly obese male not appearing to be ill. No deformity of the spine was obvious. There was slight loss of lumbar lordosis. Forward bending was limited in the lumbar region, with finger tips reaching to 8 inches from the floor. Moderate spinal

tenderness was elicited at the lumbodorsal junction and over the sacro-iliac joints. Chest expansion was 2½ inches. Cervical flexion was restricted (minimum chin to sternum distance 1½ inches). The erythrocyte sedimentation rate was normal. Complete spinal films were negative except for bilateral sacro-iliac erosive changes and blurring of the articular margins, interpreted as diagnostic of ankylosing spondylitis.

The electrocardiogram revealed slight sinus tachycardia and flat to slightly inverted T-waves in the limb leads and leads V₁ through V₆. The heart station did not feel that a diagnosis of angina pectoris was justified and regarded the electrocardiographic changes as insignificant.

The patient was treated with aspirin and phenylbutazone; he was instructed in spinal exercises and advised to use a bed board.

At follow-up 4 months later, he reported improvement of the thoracic and lumbar pain but complained of increased pain in the heels and neck.

Comment: The patient has probably had mild ankylosing spondylitis since 1946. He illustrates that there may be absence of

spinal deformity, in spite of lengthy duration of disease. Low back pain predominated originally but was so mild by 1961 that it could easily have been overlooked when the patient presented with chest pain. Migration of the major locus of pain over a span of years is typical of this disease.

CASE 2 (A-6558)

A 40-year-old truck driver was admitted in 1961, because of chest pain. In 1959, he had noted onset of lassitude, morning stiffness, and left dorsal pain. The symptoms remained mild until 1960, when he was troubled increasingly by nocturnal attacks of pain in the dorsal spine and precordium. These occurred nightly after he had been in bed 3 hours or more, were intensified by deep respirations, and ameliorated after he sat upright for 1 to 3 hours. The anterior chest pain was localized to an area 3 by 6 cm, just inferior to the left nipple. The pain was described as a mild, prolonged ache with a sharp, knifelike, intense quality during nocturnal attacks. During attacks the patient expressed fear that the pain was due to heart disease. Walking, ingestion of food, and emotional stress did not precipitate attacks of pain.

Physical examination showed a well-appearing, slightly obese male. Chest expansion was $1\frac{1}{2}$ inches. The range of spinal motion was normal except for slight restriction of lumbar flexion and extension. Left sacro-iliac tenderness was demonstrated.

Routine laboratory studies and the electrocardiogram were normal. The erythrocyte sedimentation rate (Wintrobe) was 14 mm/hour. Radiographs showed blurring of articular margins and narrowing of the right sacro-iliac joint.

During his nocturnal attacks in the hospital, the patient seemed to be in moderately severe pain and exhibited considerable left dorsal paravertebral muscle spasm and tenderness. Meperidine gave incomplete relief and did not shorten the episodes. A program of salicylates, physical therapy, and use of a bedboard did not relieve the attacks. When phenylbutazone was added, he improved and was soon able to sleep without interruption.

At follow-up 10 months later, the improvement was sustained on a program of prescribed spinal exercises, 100 mg phenylbutazone daily, and aspirin. Attacks of lumbar pain, however, had appeared for the first time.

Comment: This case is regarded as an example of early ankylosing spondylitis

with radiation of pain to the precordium. The nocturnal attacks had suggested an erroneous diagnosis of angina decubitus. Low back pain did not ensue until 3 years after the appearance of chest pain.

In the absence of bilateral radiographic changes of the sacro-iliac joints, the diagnosis of ankylosing spondylitis remains presumptive. Features supporting the diagnosis in this case are morning stiffness, lassitude, predilection for attacks during periods of rest, spinal tenderness, paraspinal muscle spasm, restriction of thoracic expansion and lumbar flexion, slight elevation of the sedimentation rate, unilateral radiographic sacro-iliac changes, and the effectiveness of phenylbutazone in low dosage.

CASE 3 (A-9995)

A 36-year-old paper mill worker was admitted in 1962, because of thoracic and lumbar pain.

In 1945, while serving in the Marine Corps, he was hospitalized for 3 months after a mortar shell exploded in his foxhole, killing his companion. His only apparent injuries were rupture of both tympanic membranes and a small laceration over the left shoulder; at the hospital he complained of "pain all over," nervousness, and temporary aphonia. He returned to duty for only 3 weeks and was found to be unfit for service because of nervousness and chest pain. He was then given a medical discharge with 50% disability compensation for nervousness.

The patient's chest pain continued without appreciable change since that time. The pain was of 2 types: a sharp, knifelike, brief, episodic deep pain at the third or fourth left chondrosternal junction and a burning, diffuse, bilateral, superficial, persistent pain anteriorly between the fifth ribs and the costal margins. There was, in addition, a slight interscapular back pain. Both types of anterior pain were made worse by deep respiratory movements and sneezing. In May of 1961, he began to have slight midsacral pain and had difficulty lifting heavy objects at work. This low back pain progressed so that he refused to do work requiring lifting after September, 1961. In the few months prior to hospitalization, morning stiffness lasting 1 hour appeared, and the low back pain became especially troublesome at night, interfering with sleep. Although his symptoms were rarely disabling, his chest pain

was so nagging and relentless that he had recently considered suicide.

Physical examination disclosed a tense, emotionally labile, muscular male whose positive findings were limited to the spine. The chest expansion was $\frac{3}{4}$ inch. On forward bending, the lumbar spine moved as a block and minimum finger to floor distance was 6 inches. The minimum chin to sternum distance on cervical flexion was $3\frac{1}{2}$ inches. Moderate tenderness was elicited over the second to fourth dorsal and the second to fourth lumbar spinous processes. Severe chest pain was precipitated by lateral or anterior-posterior compression of the rib cage. Moderate lumbar paraspinal tenderness was present. The sacro-iliac joints were not tender.

Routine laboratory studies were normal except for an erythrocyte sedimentation rate (Wintrobe) of 29 mm/hour.

X rays of the spine showed a lateral syndesmophyte at L1-2, anterior cervical syndesmophytes, and bilateral changes of the sacro-iliac joints, characterized as haziness of the joint margins, areas of widening and partial obliteration, and juxta-articular sclerosis.

The patient was treated by means of a bed board, 6 g of aspirin daily, and moist heat. He noted little improvement until phenylbutazone, 100 mg daily, was added, when he reported that his chest pain was strikingly diminished, and he became able to sleep well at night. The low back pain was slightly improved.

Comment: In view of the initial trauma from shell fire followed by a traumatic neurosis and a chronic anxiety reaction, it is difficult to date with certainty the onset of the pain referable to ankylosing spondylitis. As the patient described the chest pain in 1962, it was similar to that which we have come to associate with spondylitis. Noteworthy is the history that the chest pain antedated lumbar involvement by a number of years.

CASE 4 (A-7839)

A 37-year-old machine setter was admitted in 1961, because of recurrent chest pain. He gave a history of recurrent mild lumbar pain and stiffness since 1946, which he characterized "a weak back." During 1960, he had had an unexplained 25-pound weight loss and left lower quadrant abdominal pain over a 6-month period. In 1960, he had had the onset of intermittent left costal margin pain, associated with

weakness and dizziness. He was admitted to an outside hospital for 4 days with a tentative diagnosis of myocardial infarction, but discharged with a diagnosis of "acute chest pain of unknown etiology" after electrocardiograms were noted to be normal. The pain recurred during the subsequent 12 months until admission here, when he reported 2 to 3 daily attacks, each lasting about 30 minutes, of left costal margin and parasternal pain associated with simultaneous back pain below the left scapula. The pain was characterized as sharp and stabbing, made worse by breathing, and relieved by raising the arms over the head. He frequently noted a dull soreness lasting one to 2 days in the areas of the acute pain. Attacks were not related to exertion and they occurred frequently at night, awakening the patient from a sound sleep. For 1 year, he had had morning stiffness and increased lassitude, and episodes of anxiety, air hunger, and flushing.

Physical examination showed a well-appearing male. There was minimal *en bloc* limitation of lumbar flexion. Chest expansion was 2 $\frac{1}{2}$ inches. Tenderness was elicited over spinous processes L3-4, the left sacro-iliac joint, and the eighth left rib.

Routine laboratory studies were normal. The erythrocyte sedimentation rate was not contained.

The radiographs of the spine showed early syndesmophytes at the lumbodorsal junction, as well as blurring and sclerosis of facet and costovertebral joints, interpreted as being consistent with rheumatoid disease. The appearance of the sacro-iliac joints was not definitely outside normal limits.

A program of aspirin, 3.6 g daily, active spinal exercises, use of a bed board, and reassurance was instituted. At follow-up 4 months later the patient reported that his chest pains were controlled as long as he continued to use salicylates regularly. He continued to note mild lumbar pain and morning stiffness of 15 to 30 minutes' duration.

Comment: The diagnosis in this patient cannot be regarded as firmly established until radiographic changes appear at the sacro-iliac joints. At present the spinal radiographic findings, chronic lumbar pain, morning stiffness, nocturnal attacks, lassitude, weight loss, and episodic radicular abdominal and thoracic pain are consistent

TABLE 1. Time of Appearance of Chest Pain

Duration of arthritis, yr	0-10	10-20	> 20
Number of cases	29*	9	6

* In 8 cases, anterior chest pain was present at the onset of the spinal or peripheral arthritis.

with ankylosing spondylitis. The relief of chest pain with salicylates is additional evidence.

SURVEY OF CHEST PAIN AMONG PATIENTS WITH ANKYLOSING SPONDYLITIS

Fifty consecutive patients with ankylosing spondylitis encountered during 1961 and 1962, in routine inpatient and outpatient service at the Ann Arbor Veterans Administration Hospital were questioned for a history of anterior chest pain. Each was asked to describe, to localize, and, if possible, to date his pain. By review of records and appropriate questioning, an attempt was made to exclude chest pain of known etiology, such as visceral disease, trauma, and herpes zoster.

In each case the diagnosis of spondylitis was established by history of characteristic back pain, physical finding of limited spinal motion, and radiographic changes of the sacro-iliac joints or spine.

RESULTS

Thirty-nine patients had recent anterior chest pain and were able to give reasonably precise descriptions. Five reported previous chest pain but had not experienced it for 2 or more years. Of the remaining 6 patients, 2 gave a history of pain in the dorsal spine, and 4 of no thoracic pain whatever.

The patients' ages ranged from 22 to 70 years and the estimated duration of disease from 2 to 45 years. The time of onset of the chest pain in relation to the onset of the other arthritic pain is noted in Table 1. In Table 2, details of the patterns of pain distribution are summarized. Thirty-one patients described simultaneous

chest pain in 2 distinct islands, a posterior and an anterior, as in Figure 1. The neur segmental levels of the anterior and posterior chest pain in a given patient usually corresponded. The posterior or back pain was usually near the midline and extended along several segments. It was often similar in character to pain experienced by the patients in other regions of the spine. The posterior islands were usually smaller and less disturbing than the anterior.

The anterior pain was of 2 general types: diffuse and localized. The diffuse pain was variously described as a dull, burning, aching, or constricting sensation. It appeared to be a deep pain, not well localized on the skin surface, and was occasionally widespread, encompassing the entire anterior chest between the third ribs and the costal margins. The localized pain had a sharp, shooting, stabbing, or knifelike character. It was often at the left sternal border over a costochondral junction. Frequently patients had both types of pain simultaneously, sequentially, or alternately. In one instance did a patient characterize his pain as squeezing, heavy, or oppressive; nor did

TABLE 2. Location of Anterior Chest Pain:
44 Cases of Ankylosing Spondylitis

Anterior-posterior distribution:	
Anterior only	7
Both anterior and posterior	
As separate islands	31
Girdle distribution	6
	37
Level:	
Pain localized or extending above third rib	
Sternomanubrial joint	4
Sternoclavicular joint	1
Others	2
	7
Pain not extending above third rib	
	37
Lateralization:	
Left thorax only	23
Right thorax only	2
Bilateral	19
Midline only	0

we obtain a description of pain boring through to the back.

It should be noted that the anterior pain predominated in the lower chest. Seven patients described anterior pain above the level of the third ribs. In 4 of these instances it was localized to the sternomanubrial joint; in 2 it was diffuse pain over the pectoralis muscles; in one it was ascribed to a swollen, reddened sternoclavicular joint. Only 3 patients described pain radiating into the arms, even though many had involvement of the cervical spine.

Respiratory movements frequently increased the pain; occasionally even slight excursions were painful; at other times coughing was painless, though a violent sneeze generally made any current pain worse. Often pain was related to certain movements of the trunk, especially rotatory movement as rolling over in bed. As is true of pain of spondylitis in general, the chest pain was apt to appear after several hours of rest at night. The patients sometimes gained relief by sitting upright at the edge of the bed or by walking about. From patients observed during episodes of recent chest pain, it appears that the attacks are characteristically recurrent and episodic. Sharp stabbing pains may cluster over periods of several days to several months. The diffuse anterior pains are often continuous for months. Occasionally, chest pain is the predominant symptom of ankylosing spondylitis for a number of years.

DISCUSSION

Our experience with chest pain supplements the detailed descriptions of Forestier, Jacqueline, and Rotes-Querol (12). They noted that "radiating" intercostal pain was so characteristic of ankylosing spondylitis that its presence should lead to a search for the disease. They found that this pain always extended into the lower thorax, in keeping with the findings in the large majority of our cases. They recorded chest

pain in 25 per cent of 200 cases. Hart *et al.* (11) reported "chest symptoms" in 25 of 40 cases and noted that stiffness and tightness in the chest were often major symptoms. Julkunen (14) found thoracic pain or tenderness to be present in 44 per cent of 149 cases, remarking that this sometimes simulated visceral disease.

Of great help in making the diagnosis of ankylosing spondylitis is the evidence of involvement of the low back. Cases in which the first symptom is in the thoracic area may pose a challenging diagnostic problem initially. In various series, 1 per cent to 8.4 per cent of cases have onset in the dorsal spine (12, 14, 17-19). Chest pain was found to be a presenting symptom in 7 of a recent series of 100 patients with ankylosing spondylitis (20) and in 8 of our present series of 50 cases.

DeSeze and Lequesne (21), dealing with the problems of early recognition of spondylitis, reported 3 cases in which the initial pain was in the dorsal spine; low back pain appeared 2 to 5 years later and radiographic changes diagnostic for sacro-iliitis were not evident until 5 to 7 years after the onset of the dorsal pain. Two of our case reports [2, 3] similarly illustrate the onset of symptoms in the thoracic area.

Three explanations have been offered for the anterior chest pain of ankylosing spondylitis: local disease of anterior, musculo-skeletal structures; nerve root compression or irritation of intercostal nerves; and referral of pain anteriorly from involved spinal joints.

Anterior cartilagenous joints such as the manubriosternal may be directly involved. In addition, synovitis may occur in any of the anterior diarthroses. Although there is no histologic evidence for myositis associated with this disease, the muscles may be a local source of chest pain. In the presence of spinal inflammatory disease, splinting by paraspinal and more anteriorly situated muscles occurs, followed by pain

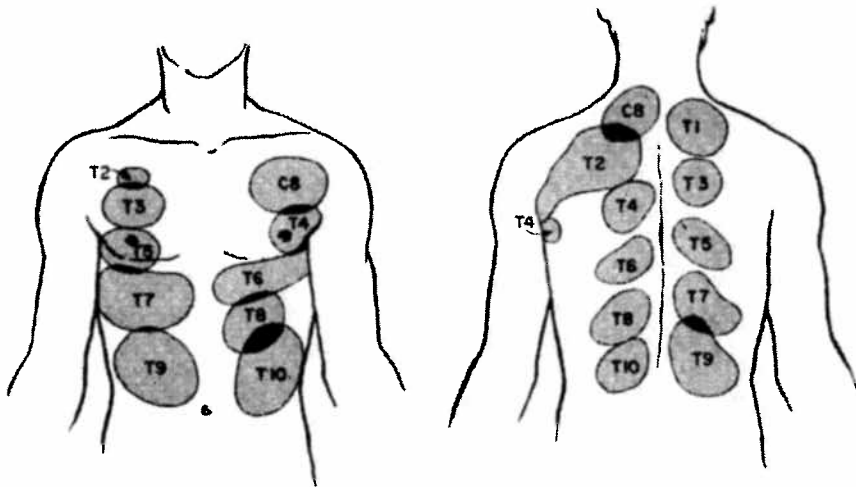


FIGURE 2. Segmental areas of deep pain, perceived as separate anterior and posterior islands, produced by injection of 6% saline into the corresponding interspinous ligaments. (From LEWIS J.: *Pain*, courtesy The Macmillan Company, New York.

and tenderness due to ischemia within these tonically contracted muscles.

The occurrence of dorsal nerve root compression in this disease is supported by a number of observations. In an autopsy performed in 1897, von Bechterew (22) found marked posterior nerve root degeneration, lesser changes in the anterior roots, and thickening of the pia mater, all confined largely to the superior thoracic segments. In a study of dry postmortem spinal specimens, Forestier and associates (12) described significantly narrowed clefts of exit for the intercostal nerves due to ossification of costovertebral ligaments. Oppenheimer (23) reported radiographic evidence for narrowed foramina in the dorsal spine in 6 cases of this disease. The spinal fluid protein has been found to be elevated in a significant proportion of cases of ankylosing spondylitis, and it has been speculated that this represents reaction to irritation of nerve roots (12). Surgeons performing osteotomies for correction of the spinal deformity have remarked upon the extensive arachnoiditis, dural thickening, and occasional encroachment on the foramina by bony and fibrous proliferation (24, 25). At variance with the hypothesis that nerve

root compression is a frequent cause of symptoms, however, is the fact that paresthesias and impairment of sensation are rarely recognized; significantly abnormal neurologic findings have not been apparent to physicians reporting experience with large numbers of cases (12, 26-28).

Referral of pain from painful posterior spinal joints may be the best explanation for the anterior chest pain found in many of our patients. The dull, diffuse anterior pain and the rarity of paresthesias in these patients are more consistent with referral of deep posterior pain than with projection of pain from compression of sensory thoracic roots. In the classic experiments of Lewis and Kellgren (29) deep pain produced by injection of hypertonic saline into the interspinous ligaments was referred within segmental root areas. The pain as charted by them tended to break into islands, an anterior and a posterior, strikingly similar to those outlined by some of our patients (Figure 2).

OTHER MUSCULOSKELETAL CAUSES OF CHEST PAIN

At the outset it should be emphasized that appropriate laboratory procedures and

radiographs be obtained in order to rule out infectious, traumatic, and neoplastic diseases involving musculoskeletal tissues. The prevalence of the various rheumatic causes of chest pain is unknown. A report from the office practice of a cardiologist classified diagnostically 600 new patients with chest pain. Two hundred twenty-five had pain considered to be of cardiac origin; 236 were presumed to have radicular pain arising from the spine (30). Another report of 200 consecutive outpatients with chest pain classified 60 as having "intercostal neuralgia" (31).

Numerous syndromes can be grouped for the sake of convenience under the heading of nonarticular rheumatism. Intercostal cramplike pain is often associated with hyperventilation or anxiety attacks. Dull muscular pain is frequently ascribed to faulty posture or excessive muscular strain. Tender, painful areas over the thorax have been delineated and classified topographically (the costochondral syndrome, manubriosternum syndrome, pectoral muscle syndrome, xiphoid process syndrome, and anterior chest wall syndrome, among many others). A diagnosis of nonarticular rheumatism must often remain tentative until adequate follow-up

with careful consideration of possible underlying disease has been accomplished. This category remains large but has contracted somewhat in recent years as the manifestations of cervical radicular compression and rheumatoid disease have been appreciated.

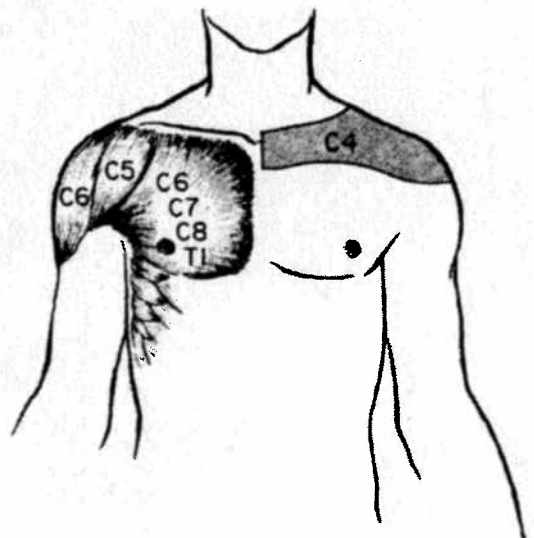
A particular mechanical cause for chest pain is the rib facet syndrome, characterized by sudden pain and tenderness along the entire course of a rib, and relief by manipulation (32).

In a sense, degenerative disease of the cervical spine is also a mechanical cause of chest pain. Compression of cervical nerve roots within constricted cervical foramina is due to osteophytes, narrowing of intervertebral disc spaces, and lateral protrusion of the intervertebral discs.

In such cases, anterior chest pain may arise from compression of motor roots C5-C8 or sensory roots C3-4. The chest pain has been described in detail by Davis (8), and the thoracic distribution of pain is diagrammed in Figure 3. It is to be emphasized that this pain is in the upper chest. A history of cervical pain and limitation of motion is frequently present in these cases, and it is often possible to reproduce the distant pain by motion of

FIGURE 3. Cervical innervation of muscle (ventral motor roots) and skin (dorsal sensory roots) of anterior chest wall, illustrating areas of chest pain that may arise from compression of the corresponding cervical roots. (Modified from Davis, D.: *Radicular Syndromes* (7), courtesy of the Year Book Medical Publishers, Inc., Chicago, and Jack Wolfe, Staughton, Massachusetts.

DELTOID
(C5 & 6)
PECTORALIS
MAJOR
(C5 to T1)
SERRATUS
ANTERIOR
(C5 to C7)



the neck. The diagnosis of posterior root compression is facilitated by noting paresthasias, stabbing pains, and sensory loss in an area consistent with a radicular dis-

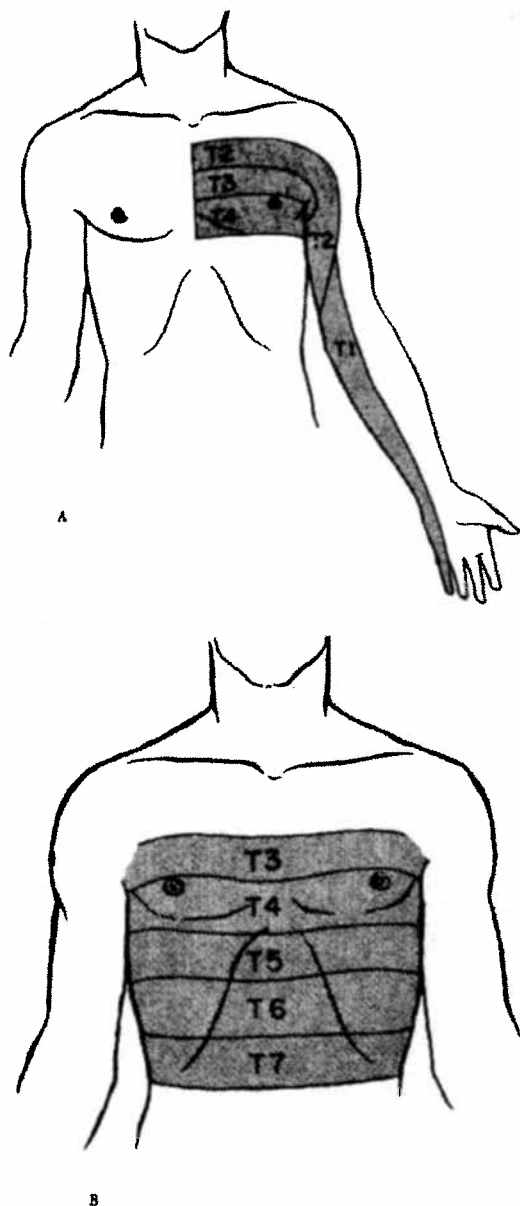


FIGURE 4. A, The usual area of referred anginal pain (37); and B, the territory encompassing the anterior chest pain encountered in patients with ankylosing spondylitis (except for pain arising in the sternoclavicular and sternomanubrial joints).

tribution. Compression upon the anterior cervical roots C5-8 is said to produce dull pain in the serratus anterior, pectoralis, and deltoid muscles. This appears to be dependent upon pain arising from sustained contraction with ischemia of the stimulated muscle (33).

Davis has indicated that degenerative disease of the spine is a frequent cause of pain in the upper chest. He and other physicians interested in the problem have assembled large series of such cases.

In the lower anterior chest, or the area between the fourth ribs and the costal margins, degenerative disease of the spine is, however, not a frequent cause of pain. Oppenheimer (23) collected 243 cases of pain ("segmental neuritis") associated with radiographically narrowed intervertebral foramina and degenerative disease of the spine. Fifty-eight of the affected foramina were in the cervical and the remainder in the lumbar spine. None were found in the dorsal spine. Oppenheimer was probably the first author dealing with referred pain from the spine to attempt painstakingly the separation of degenerative disease from ankylosing spondylitis by means of acceptable clinical and radiographic criteria.

Others have noted the relative infrequency of narrowed thoracic intervertebral foramina due to degenerative disease (8, 34). In the middorsal area, a relatively immobile and protected area of the spine, protrusions of intervertebral discs are rare (35, 36).

Finally, it should be emphasized that degenerative disease is not primarily an inflammatory process but rather an exaggeration of normal aging. Local pain ascribed to degenerative spinal disease is often mild, reminiscent of muscle fatigue with mal-posture. Distant pain is difficult to explain when a neurogenic mechanism cannot be demonstrated.

INTERRELATIONSHIP BETWEEN THE SYMPTOMS OF ANKYLOSING SPONDYLITIS AND CARDIOVASCULAR DISEASE

By means of the distribution of pain, the differentiation of spondylitis from coronary insufficiency is obvious in most cases. We did not elicit a description of oppressive substernal pain in our series. In Figure 4 A, the usual distribution of referred anginal pain is diagrammed for comparison with the area encompassing the anterior chest pain encountered in our spondylitis series, Figure 4 B. Although the areas are seen to overlap somewhat, heart pain is generally higher. Rarely, anginal pain may be referred lower, to the fifth, sixth, and seventh dermatomes (37). Most of these atypical cases of angina may be differentiated from spondylitis by the absence of back pain or the presence of pain radiating into the arms, which is rare with spondylitis.

Classical effort pain of angina is not found with spondylitis, in which most patients feel best while walking; careful analysis of their exertional pain will usually demonstrate its precipitation by motion or jarring of tender areas in the spine.

The pain distribution of spondylitis may mimic more closely that of pericarditis, aortic aneurysms, and other visceral pain commonly referred to the back from the pleura, lower esophagus, and mediastinum. Curiously, in our spondylitis patients describing unilateral chest pain, there was a marked preponderance of those having pain in the left side over the right—23 cases to 2.

Apart from chest pain, other features of ankylosing spondylitis have facilitated an erroneous diagnosis of heart disease. The episodic nature and duration of the attacks may suggest thrombo-embolic events. Loss of chest expansion is a cause of increased exertional dyspnea. The occasional low-grade fever and frequently elevated sedimentation rate associated with spondylitis

may be confusing when a diagnosis of myocardial infarction is entertained. The tell-tale findings in the back may easily be overlooked while the patient is confined to bed with a presumptive diagnosis of heart disease. In this era of medical specialization, the patient may be inclined to withhold from his "heart doctor" his seemingly irrelevant, chronic history of back pain.

The cardiologist or other physician consulted because of chest pain is in an excellent position to make an early diagnosis of ankylosing spondylitis. The chest pain, rarely the first symptom of the disease, is more often an emotionally charged symptom which impels the patient to seek help. A positive diagnosis is of itself a reassurance to the patient. Early use of a bed board and a full physical medicine program will prevent a certain amount of deformity. Having established the diagnosis, the physician is better equipped to interpret the diverse symptoms which may afflict the patient periodically over a number of years.

SUMMARY AND CONCLUSIONS

Four cases of ankylosing spondylitis are reported in which the presenting problem on admission to the hospital was chest pain of unknown etiology.

A history of anterior chest pain was found to be very frequent in a survey of 50 consecutive patients with ankylosing spondylitis. Forty-four patients gave a history of chest pain, not explicable by visceral disease. Thirty-nine of these were having chest pain at the time of examination or had experienced episodic chest pain during the preceding 24 months.

The character and distribution of the pain are summarized. In 37 cases, pain was present near the dorsal spine during periods of anterior pain, either as a separate island at a segmental level approximating the anterior pain (31 cases) or as part of a continuous girdle of pain (6 cases).

The anterior pain was below the third ribs in 37 cases. Midline sternal pain was not described, except at the sternomanubrial joint, where a history of pain and swelling was elicited in 4 cases.

Although typical angina pectoris was not simulated closely in any of our cases, the chest pain and systemic manifestations of ankylosing spondylitis sometimes lead to confusion with disease of the heart, great vessels, and other thoracic viscera.

SUMMARIO IN INTERLINGUA

Es reportate quatro casos de spondylitis ankylosante in que le problema de presentation al tempore del admission al hospital esseva dolor thoracic de incognoscite etiologia.

In un revista de 50 consecutive patientes con spondylitis ankylosante, il esseva trovate que 44 habeva antecedentes de dolores antero-thoracic, non explicabile per un altere maladia. Trentanovem de istes habeva currentemente dolores thoracic o habeva experienciate episodice dolores thoracic in le curso del precedente 24 menses.

Le character e le distribution del dolor es summarisate. In 37 casos, dolor esseva presente in le vicinitate del spina dorsal durante periodos de dolor anterior, a vices como un separate insula a un nivello segmental approximante illo del dolor anterior (31 casos) e a altere vices mergente in un continue cintura de dolor (6 casos).

Le dolor predominava in le thorace inferior—con un extension supra le nivello del tertie costa in solmente 7 casos. Dolores meso-sternal non esseva describe excepte al junction sternomanubrial, ubi le antecedente de dolor e tumescencia esseva reportate in quatro casos.

Ben que typic angina de pectore non esseva simulate in ulle de nostre casos, le dolor thoracic e le manifestationes constitutional de spondylitis ankylosante es occasionalmente confundite con morbo de corde, del grande vasos, e de altere viscere thoracic.

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