

Philip S. Hench's Rheumatology Axiomatic Generalizations

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ABSTRACT. Philip S. Hench, MD, the first Mayo Clinic rheumatologist, came to Mayo Clinic in 1921. Because of his efforts in patient care, education, and research, and those of his colleagues, Mayo Clinic has been considered the first academic rheumatology center established in the United States. An early, popular lecture he gave to the internal medicine residents was an important and unique part of the rheumatology education program and was entitled "Axiomatic Generalizations Useful in the Diagnosis of Rheumatic Diseases." We review the axioms in light of the status of rheumatology in the 1920s and 1930s when they were written, and assess their relevance today, 70 to 80 years later. (*J Rheumatol* 2011;38:2664–70; doi:10.3899/jrheum.110606)

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PHILIP S. HENCH
DIAGNOSIS OF RHEUMATIC DISEASES

Philip S. Hench, MD (1896-1965), Mayo Clinic's first rheumatologist, came to Rochester, Minnesota, in 1921 for training in medicine and surgery after graduating from the University of Pittsburgh Medical School^{1,2}. In 1923 he was appointed first assistant in the Section of Medicine and was asked by Dr. W.J. Mayo to specialize in arthritic diseases. In 1926 Dr. Hench was appointed to the Mayo Clinic staff and to head a new hospital service for patients with chronic arthritis². After a decade of working as the only rheumatologist, he was joined by Dr. Charles Slocumb³. Others later joined the rheumatology section, and most of them were trained at the clinic.

Dr. Hench was interested in all phases of rheumatology, and in addition to a busy rheumatology practice he was active in teaching and clinical research. These early activities led to the recognition of the Mayo program as the first academic rheumatology service established in the United States⁴.

Educational activities in the rheumatology service were diverse. To help patients and families learn about arthritis, he and others wrote booklets on arthritis for lay persons. Teaching of medical residents was done on daily hospital rounds. Generally, 3 medical residents rotated quarterly on each internal medicine service, including rheumatology². Drs.

Hench and Slocumb and colleagues also gave lectures on various forms of arthritis to residents and other interested physicians³. One of Dr. Hench's lectures was a particular favorite of the residents. It included the discussion of a series of short statements about clinical findings that characterized different forms of arthritis⁵. Dr. Hench called these clinical rules "axioms" and considered them important aids to learning about rheumatology. These teaching points were, perhaps, forerunners of the modern "clinical pearls"⁶. Although Hench likely gave his lecture on the axioms many times, he did not publish the list, and at some point after he retired in 1956 his files on the axioms were lost.

Some time ago, C. Richard Gill, MD, a retired internist, mentioned to one of us (LG) that he had attended a lecture by Hench on the axioms during his training at Mayo Clinic and had stored away the lecture handout provided by Dr. Hench that included a list of the axioms. Dr. Gill sent those lecture notes to us.

Because the axiom lecture was a unique and important early educational effort to teach rheumatology, developed by a prominent early American rheumatologist, we considered it worthwhile to review the axioms in light of the status of rheumatology in the 1920s and 1930s when most of the axioms were written. We also assess any relevance they might have today, 70 to 80 years since they were first recorded, taking into consideration the great advances in the understanding of rheumatic diseases since then.

Hench's list of axioms included 40 items that emphasized common forms of arthritis but also included uncommon conditions (Table 1). They focus on important distinguishing features from the patient's history, physical examination, laboratory tests, and even response to therapy.

The first 2 axioms are about patients presenting with a

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single painful swollen joint that had developed either acutely (Axiom 1) or chronically (Axiom 2). The list of diseases to consider indicates the most frequent causes of these presentations in the earlier era. For acute monoarthritis, the differential diagnosis is still relevant. However, gonorrheal arthritis is less common in most practices now than other forms of septic arthritis. In addition, calcium pyrophosphate dihydrate (CPPD) crystal deposition disease and other crystal-induced arthritides described in the 1960s need to be added to the list for acute arthritis to make it more complete in today's practice^{7,8}.

Regarding chronic monoarthritis (Axiom 2), Hench pointed out that although rheumatoid arthritis (RA) is usually polyarticular, it may present in one joint. In addition, tuberculous arthritis is usually monoarticular, but may be polyarticular in about 20% of instances, indicating that variations in the usual presentations need to be kept in mind. Additional diagnoses can be added to a modern list of chronic monoarthritis, including 2 diseases considered variants of RA in the 1920s and 1930s (spondyloarthropathy and reactive arthritis). There are many less common processes in this category. Helpful diagnostic tests not available in the 1920s and 1930s include synovial fluid analysis, new imaging techniques, and arthroscopy, while in earlier times an open synovial biopsy with cultures would have been performed in some instances. A specific diagnosis should be pursued, but some cases resolve spontaneously⁹.

Axioms 3 through 14 relate to the tendency of certain rheumatic diseases to involve particular joints. Axiom 3 focuses on the conditions that affect the distal interphalangeal joints of the fingers. The terminology for these joints has changed since earlier days. The "terminal joint of a thumb," which Hench used at times, is now the "first interphalangeal joint," and the interphalangeal joints are generally designated "proximal" and "distal" rather than "mid-" and "terminal." The first choice in Axiom 3, osteoarthritis (OA), is by far the most common cause of swollen distal interphalangeal joints. In the majority the swelling is bony with minimal tenderness, except early in the development of OA. "Baseball finger" is generally unilateral, involving one or a few joints of a hand, points Hench likely made in his lecture. When the distal interphalangeal joints are inflamed, Hench advised looking for cutaneous and nail evidence of psoriasis to corroborate that suspected diagnosis.

In Axiom 4, the important point is that metacarpophalangeal joints are characteristically affected by RA but rarely if ever by primary OA, even if the latter is present elsewhere. If osteoarthritic-type changes are located in the metacarpophalangeals, it is probably of the secondary type, such as trauma or an uncommon disease affecting these joints, such as hemochromatosis. Axiom 5 is similar but describes the involvement of the metatarsophalangeal joints. If these joints are palpably inflamed, the case for RA is stronger. Metatarsophalangeal joints are seldom affected by OA. An

exception, Hench noted, is when OA affects the big toe joints. Spondyloarthropathies and reactive arthritis may also involve the metatarsophalangeal joints.

Axiom 6 is based on the finding that RA seldom causes shoulder pain unless other joints are also affected, and rotator cuff lesions are common and independent conditions. Axiom 7 describes the manifestations of the poorly understood shoulder-hand syndrome now called "complex regional pain syndrome." On examination the hands are typically cool, moist, tender, and diffusely swollen. The shoulder-hand syndrome is less common in our practices today than in the 1930s and 1940s. Axiom 8 points out that acute symptoms in the shoulders are most commonly due to tendinitis (bursitis), lesions of rotator cuff structures. If the tenderness and pain are localized, the findings are even more suggestive.

Axiom 9 recognizes RA as the most common cause of chronic elbow synovitis, which may lead insidiously to progressive flexion contractures. In early stages, radiographs can show few abnormalities. Usually other joints are affected in RA, helping with the diagnosis. Axiom 10 indicates that gout should be suspected in cases of acute inflammation of the elbow joint, olecranon bursa, or tendons, especially if the patient is a man between 20 and 60 years of age. To bring this axiom up to date we can add CPPD crystal deposition disease as a cause, especially in someone over age 60, and even septic olecranon bursitis.

Axiom 11 identifies ankylosing spondylitis (AS) as the usual cause of bilateral sacroiliitis, but in a very small proportion of cases (about 1%) only one side may be affected, at least initially¹⁰. An infectious cause such as tuberculosis needed to be excluded when unilateral sacroiliitis was seen. The same holds true today. In Hench's day, AS (our parentheses in Table 1) was considered a variant of RA and thus was called rheumatoid spondylitis.

Axioms 12–14 cover sciatica presenting in different fashions. In "alternating sciatica" (Axiom 12), the symptoms affect each side at different times usually separated by weeks. When the cause was rheumatoid spondylitis (AS), a neurologic deficit seldom occurred. An early study found sciatica to be a significant symptom in 20% of patients with AS and the initial symptom in 10%¹⁰. A cord tumor generally is the most likely cause of continuous and progressive symptoms of bilateral sciatica (Axiom 13). Axiom 14 points out that a protruded disk is the most common cause of unilateral sciatica, but not the only cause, which is a good thing to keep in mind.

Treatment for gout in the 1920s and 1930s was inadequate in most patients. Many developed chronic gouty arthritis and tophi in various tissues. Axioms 15–24 are most applicable to patients with uncontrolled and severe gout, which was common before probenecid, sulfipyrazone, and allopurinol became available. Such patients are still seen occasionally today. Some of them are mistakenly considered to have RA and others have avoided seeking medical attention. Axiom 15 describes the early course of uncontrolled gout with recurrent

acute episodes of varying severity and duration. To modernize Axiom 16 we might change “split shoe” to “sandal” as the patient tries to avoid any contact or pressure on the inflamed and very painful toe joint.

The next axioms call attention to characteristics or conditions that were recognized as likely to precipitate an acute gouty attack, especially in patients whose serum urate was not well controlled. These include a mild injury to a foot, overeating, especially of high purine-containing foods, and extra alcohol, as might be the case at a celebration or on a hunting or fishing trip. Axiom 20 is related to another, older observation of an increased frequency of acute gout after a surgical procedure. Postoperatively, dehydration and a catabolic state result in an increase in body urate concentrations, leading to a gouty attack. Axiom 21 recognizes that certain drugs such as thiazide diuretics can elevate serum urate concentration.

Axiom 22 is similar to Axiom 10. Axiom 23 helps differentiate subcutaneous nodules near or at the elbow. When nodules are present in both locations, either RA or gout could be the cause. The patient’s history may provide diagnostic clues. Although synovial fluids from joints and bursae were not routinely examined in the 1930s, if a tophus was suspected it was common to try to “needle” it with a small syringe and a 20-gauge needle. After piercing the nodule with the needle, the syringe was twisted and a vacuum created in the syringe. The syringe was withdrawn and the needle tip was wiped on a glass slide and looked at under low- or medium-power light microscopy for urate crystals. The identification of typical urate crystals made a definitive diagnosis of gout. If any fluid was obtained, a Gram stain and culture could be done also.

The first part of Axiom 24 concerns patients with advanced gout. But in some cases urate renal stones may occur early in the course, and the axiom is worth keeping in mind. The second part of this axiom lists renal complications of RA also seldom seen today. Gold therapy is now seldom started, and amyloidosis is a rare complication. Vitamin D was an experimental medication for RA and was sometimes given in toxic doses.

Many patients with RA developed palpable lymph nodes as part of the disease, perhaps more so in earlier days. In such instances the lymph nodes grow slowly, rarely become extremely large, and remain relatively soft and non-tender. If on the other hand the nodes are atypical, another cause should be considered and a biopsy performed. In the 1920s and 1930s Hench found that tuberculosis was the most likely explanation for atypical nodes, but that may not be true today.

Muscle atrophy is part of active RA. It is more evident near involved joints and tends to be proportional to the activity of the arthritis. But if it is localized and out of proportion to the underlying disease (Axiom 26), the physician should suspect an unrelated cause — either something coincidental, or a complication of the arthritis such as carpal tunnel syndrome, or another neuropathy or myopathy.

“Primary fibrositis” was a term used in the 1920s and

1930s that included fibromyalgia (FM)². Axiom 27 warns us to be cautious about making a diagnosis of primary fibrositis (FM) if the erythrocyte sedimentation rate (ESR) is elevated but rather to consider an early underlying inflammatory disorder. This axiom was written before antinuclear antibody or rheumatoid factor tests were described, which help diagnose these diseases. It was also before polymyalgia rheumatica was recognized, which was named “secondary fibrositis” at Mayo Clinic about 1940 after the distinctive character of “morning stiffness” was appreciated as an important indicator of the presence and severity of systemic inflammatory arthritic disorders. When a clue such as the elevated ESR may indicate an underlying inflammatory condition, it is necessary to look again. Primary fibrositis, or FM, on the other hand, is a non-inflammatory process. In the 1920s and 1930s only a small number of basic blood tests were available and often few tests were ordered as part of a diagnostic investigation. Thus, an abnormal ESR was given more importance than we sometimes give it today.

In the earlier era, acute rheumatic fever was frequent and could be confused with less common conditions. Leukopenia occurred in systemic lupus erythematosus (SLE now, but called “LE” in the axioms), but leukocytosis was usual in rheumatic fever (Axiom 28). Nephritis occurred in LE, but not in rheumatic fever (Axiom 29).

Acute rheumatic fever typically responded quickly to therapeutic doses of salicylates. The diagnosis of acute rheumatic fever was unlikely if the symptoms were not clearly improved by an adequate dose of salicylates over several days (Axiom 30). Hench provided several alternatives. The axiom is less applicable today because of the low incidence of acute rheumatic fever, polyarticular gout, and gonorrhea. A historical note of interest is that in 1925 Hench wrote that “febrile rheumatoid arthritis” might instead be called “Still’s disease of adults”¹¹, preceding the later description by Bywaters of similar cases by some 40 years¹².

Axiom 31 describes the course of some cases of gonorrheal arthritis. When gonococcal organisms enter the bloodstream from the primary site of infection and septicemia develops, acute transitory arthritic symptoms may be noted in a number of joints, but after several days the joint symptoms usually become monoarticular and more severe. Gonorrhea is less common today in most physicians’ practices, but the axiom can be considered accurate in such cases. If gonorrheal arthritis is not recognized early and treated, permanent joint damage could follow.

Documented genital gonorrhea with arthritis presumed due to a gonorrheal joint infection should respond to antibiotics (Axiom 32). If little response is seen, consider “post-gonorrheal rheumatoid arthritis.” The concept that many cases of RA were precipitated by an infection was prevalent in the 1920s and 1930s. Also, most forms of chronic nonseptic arthritis were considered variants of RA. Today we would make the diagnosis of reactive arthritis. However, the axiom

still provides good advice. When a rheumatic disease does not follow an expected course, the physician must reconsider the diagnosis. This axiom must have been written or modified after sulfa drugs and penicillin (mid 1940s) became available.

Hench and others observed that when young women with RA became pregnant, or if patients developed jaundice, the arthritis usually improved². Thus, if a new arthritis appeared during pregnancy, some other cause should be suspected (Axiom 33). After delivery, body physiology reverted to prepregnancy status and an underlying rheumatic disease could develop (Axiom 34). Option “c.” of Axiom 34 must have been added after 1948 in the early cortisone era. It was noted that severe RA treated with high doses of cortisone worsened when the dose was abruptly stopped, leading to increased joint symptoms, but also sometimes less well-defined manifestations such as vasculitis or other “rheumatic or collagen inflammations”². Similarly, if arthritis developed during jaundice, some other condition should be considered such as hepatitis with arthritis or malignancy with metastatic bone lesions near joints (Axiom 35). In the 1930s Hench hypothesized that an alteration of hormone metabolism in pregnancy and jaundice caused the arthritis to improve. In the postpartum period, or if the jaundice relented, hormonal changes reverted to normal and the arthritis was no longer suppressed. The clinical observations in such cases are still true, although cases are infrequently seen. These observations led Hench to try cortisone to treat RA¹³.

A severe destructive radiologic alteration of the hand and foot joints called “penciling” is described in Axiom 36. It may occur in one or multiple joints. If it becomes extensive it appears as *main-en-lorgnette* (opera glass hand) with collapsing and shortening of the fingers. The most common cause is advanced psoriatic arthritis and occasionally RA. Erosive OA has been reported as a cause. The latter and other unusual etiologies such as leprosy (seldom seen in the United States) or a neuropathic process are likely to result in joint changes in a few joints at most.

Patients with chronic symptoms that seem to require narcotics do not have an ordinary rheumatism. Axiom 37 refers to treatment with narcotics that has been suggested by the patient or a caregiver because of the severe symptoms. When localized to one or 2 joint areas, the symptoms may be related to cancer (usually metastatic), and when widespread, a severe psychological illness. In the latter instance the chronic pain may be a primary or secondary manifestation of the patient’s emotional distress, and will not respond to the usual antirheumatic treatment. Drug-seeking behavior could be added today. Few patients with RA, even when extensive, become dependent on narcotics. However, Hench did comment that narcotics may be justified for temporary use in rare cases with severe symptoms due to documented acute gout, ruptured disc, acute rheumatic fever, and traumatic arthritis¹⁴.

Axiom 38 is somewhat similar to 37 but emphasizes a different presentation. The patient looks in relatively good gen-

eral health but has all the symptoms listed. Hench called it “psychogenic rheumatism.” We no longer use this term but diagnose FM, or use terms such as “indeterminate pain” or “chronic pain.” Discomfort related to arthritis is located in the region of the joints or other involved structures. These structures are usually tender, and the pain is generally made worse by movement of the joint or stressing its periarticular supporting tendons and ligaments. On occasion the pain is referred away from the joint, but the usual referral patterns are explained by anatomy of the nerves. Axiom 39 also relates to failure to respond to treatment. Most patients with an active rheumatic disease feel improved after therapy has been started, even though the improvement may be incomplete or temporary. As in Axiom 37, when the pain is localized, consider metastatic malignancy, and when diffuse consider psychoneurosis, when there is no response to the usual therapies.

Axiom 40 is about the use of and response to aspirin. It was one of the better-recalled axioms. When examining a patient claiming to have “severe rheumatism” who looks well and maintains that aspirin was of absolutely no value regardless of the amount taken (“aspirin futility”), or if it was not taken in proper doses (“aspirin inutility”), then the physician should suspect “psychogenic rheumatism.” Hench did not include “aspirin utility” in the axiom but it was also spoken of later and probably originated with him. It indicated some reasonable result when aspirin was tried in appropriate doses. Prior to the discovery of glucocorticoids and the newer nonsteroidal antiinflammatory drugs, aspirin was the only drug available in that category. When a maximum effect was desired, the dose was adjusted to achieve a 30 mg/dl blood level in the morning before the first daily dose, which usually meant 10 to 15, or occasionally more, 325-mg tablets daily. One can imagine that gastrointestinal toxicity and salicylism were not uncommon. Doctors who did not order blood salicylates levels prescribed increasing doses until tinnitus developed and then dropped the dose by one or 2 tablets per day. The physician must find out what the patient means by “aspirin never helps me.” As with the earlier axioms, the term “psychogenic rheumatism” can be changed to a modern diagnosis such as FM or undefined chronic musculoskeletal pain, as the case may be. Axiom 40 could be altered for today to include nonsteroidal antiinflammatory drugs or analgesics.

The axioms were likely written mostly in the 1920s and 1930s, and perhaps in a few cases modified in the early 1940s before or during World War II, while Hench served in the US Army. The axioms were one of the earliest formal efforts to aid in the teaching of rheumatology to young physicians at a time when many American medical schools had little or no instruction on this topic. Hench believed that familiarity with the axioms during the examination would sharpen “one’s diagnostic acumen and improve the differential diagnosis” when a patient with musculoskeletal symptoms was seen in the office or in the hospital. As medical practice grew more complex because of expanded knowledge, efficiency in exam-

ining patients became more important. Familiarity with the axioms would foster asking the right questions, which then helped to direct the examination along the correct lines to reach the diagnosis faster but still accurately. Because of individual differences among patients, Hench suggested the axioms should be considered “usually correct” but not always. The success of the effort is suggested by the fact that they were recalled years later by many who had heard them. Hench noted that they were even quoted by others in print⁵. Because physician education was a basic mission at Mayo Clinic, many physicians came for training. Dr. L. Emmerson Ward recalled that Dr. H.F. Polley did a survey of the American College of Rheumatology (American Rheumatism Association at that time) membership directory in 1950 and found that 10% of its members had had some rheumatology education at Mayo Clinic¹⁵.

Hench’s differential diagnosis of diseases listed in each axiom reflected the frequency and importance of conditions seen in the practice of rheumatology at Mayo Clinic, a practice that was likely similar to many others. But even in today’s practices, the relative frequency of rheumatic diseases in most settings is related to local population mixes, referral patterns, or physician interests. Thus, the order of listing of diseases is not a critical issue.

In addition to aids in diagnosis, Hench suggested that the axioms should be studied for the clues they held as to the reasons they were distinctive, which might shed light on the more basic nature of the diseases.

In the 1930s and before, the classification of arthritis was relatively simple. Most rheumatologists grouped arthritis cases within several categories including acute rheumatism (rheumatic fever), nonarticular rheumatism, gout, chronic rheumatism (atrophic arthritis or RA, and hypertrophic arthritis or OA), and septic arthritis¹⁶. With the rapid advances in subsequent years, Hench pointed out that by the 1940s the Rheumatism Reviews published in the *Annals of Internal Medicine* mentioned about 200 different arthritic conditions⁵. Of these he commented, “Besides the 10 most common ones, about 190 other conditions are ‘lurking nearby’ to trap the unwary, the inexperienced, conditions of which the skilled rheumatologist must be constantly aware”⁵. The terminology of the diseases has changed in many instances in the decades since the axioms were written as knowledge and understanding of rheumatic diseases has advanced. However, the natural history of the various forms of arthritis and their presentations are similar now, even though the courses and outcomes may be altered to some degree by modern therapies. In addition to fewer cases of such conditions as acute rheumatic fever and gonorrheal arthritis, fewer patients are seen with advanced disease as described in some axioms, which remain accurate, but less applicable.

We can conclude that many of Hench’s axioms are still useful in modern medical practice. His views on the relationship between teachers and students, as here excerpted from a

lecture given to residents in internal medicine (reprinted in the magazine *Mayovox*, February 20, 1955), reflect an attitude he tried to foster in his axioms, and is as relevant today as at any time:

First, each owes the other loyal cooperation. Give to your teachers here that respect which all earnest teachers and scholars deserve. But (and this is most important) you must not give to their ideas your unquestioning allegiance. For if you do, you will defeat one of the main purposes of every medical school, hospital and clinic, and the chief objective of the Mayo Foundation, namely, your chance to extend knowledge, and you will reject the glowing philosophy of all science, that the truth of today is only the half-truth of tomorrow.

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Table 1. Axiomatic generalizations useful in the diagnosis of rheumatic diseases. This list of axioms was slightly edited and reformatted from Dr. Hench’s original lecture notes.

1. In the presence of acute monarthritis, suspect:
 - a. Acute traumatic arthritis
 - b. Acute gouty arthritis
 - c. Rheumatoid arthritis
 - d. Acute gonorrheal arthritis
 - e. Acute septic arthritis
2. In the presence of chronic monarthritis, suspect:
 - a. Rheumatoid arthritis
 - b. Tuberculous arthritis
 - c. Rare conditions – coccidiomycosis, synovioma, etc.
3. When terminal phalangeal joints of fingers are involved, suspect:
 - a. Primary osteoarthritis (Heberden’s nodes) in woman age 50 years or more.
 - b. “Baseball finger” (old traumatic arthritis)
 - c. Psoriatic arthritis (inflammatory arthritis)
 - When a terminal joint of thumb is affected (inflamed), with or without involvement of mid-phalangeals, suspect rheumatoid arthritis.
 - When a terminal joint of a toe is affected (inflamed), suspect psoriatic arthritis.
4. When metacarpophalangeal joints are chronically affected, suspect: Rheumatoid arthritis.
5. When metatarsophalangeal joints are chronically painful (especially with joint swelling elsewhere), suspect: Rheumatoid arthritis, even if joints and x-rays look normal.
6. When one shoulder is affected acutely or chronically, rheumatoid arthritis is perhaps the last condition to suspect, especially if the condition is not present elsewhere and no other joints are affected.
7. When one or both shoulders and hands are affected acutely, but not elbows, suspect: The shoulder-hand syndrome.
8. When one or both shoulders are affected alone acutely suspect: Tendinitis (bursitis) with or without calcific deposits.
9. When the elbow joint is affected chronically, suspect: Rheumatoid arthritis, especially with beginning flexion deformity even though x-rays are normal.
10. When an elbow is affected acutely, suspect: Acute gouty inflammation of the bursa, joint or tendon, especially if the patient is a male aged 20-60 years old.

11. When sacroiliac joints are involved alone:
- If one sacroiliac joint is affected clinically or roentgenographically suspect: The first stage of rheumatoid spondylitis (ankylosing spondylitis), but rule out tuberculous monoarthritis of a sacroiliac joint.
 - When both sacroiliac joints are affected, suspect: Rheumatoid spondylitis (ankylosing spondylitis), first stage.
12. With alternating sciatica (alternating from one leg to the other over days, weeks, or months) think of:
- Rheumatoid spondylitis (ankylosing spondylitis)
 - Mid-line protruded disk.
 - Rarely, laterally protruded disk, or cord tumor.
13. With bilateral sciatica, think of:
- Cord tumor.
 - Rheumatoid spondylitis (ankylosing spondylitis).
 - Protruded disk.
14. With unilateral sciatica, think of:
- Protruded disk.
 - Rheumatoid spondylitis (ankylosing spondylitis).
 - Cord tumor.
- Primary suspicions regarding sciatica: If unilateral – disk; if bilateral – tumor; if alternating, - spondylitis.
- Suspect gout:
15. When acute severe arthritis develops that clears up quickly (few days to wks.).
16. At the sign of the “split shoe”.
17. When acute arthritis develops after trivial trauma.
18. When acute arthritis develops after certain celebrations.
19. When acute arthritis develops during a hunting or fishing trip. “The patient returns home with game, gun, and gout.”
20. When acute arthritis develops within the first 7 days after a surgical operation (generally on the 3rd to 5th postoperative day).
21. When acute arthritis develops after starting on certain medications.
22. When acute olecranon bursitis develops.
23. When subcutaneous olecranon nodules are present, suspect: Gout when the acute inflammation is at the point of the elbow, and suspect rheumatoid nodules when they are located a few cm below the point of the elbow. The patient’s history will provide diagnostic clues, but confirm by biopsy.
24. If a patient has arthritis and renal disease:
- Suspect gout and urate renal gravel or stones if the patient has acute arthritis (or a history thereof) and also renal colic (or a history thereof).
 - Suspect rheumatoid arthritis if the patient has chronic arthritis (with no history of acute recurrent arthritis) and nephritis complicated by a renal lesion from: 1. chrysotherapy, or 2. amyloidosis, or 3. vitamin D preparation.
25. Lymphadenopathy in rheumatoid arthritis:
- Is related to the arthritis when the lymph nodes enlarge slowly and rarely beyond moderate size and remain of soft consistency.
 - Is not related to the arthritis when lymph node enlargement is atypical (growth too rapid, too large, too hard, too tender, location unusual). Then, suspect a non-rheumatoid cause including tuberculosis, Hodgkin’s, and adenocarcinoma. Do biopsy.
26. In a patient with rheumatoid arthritis develops muscle atrophy that is localized and out of proportion to the activity and extent of the disease suspect: A non-rheumatoid cause, either a complication or a coincidental event.
27. In a patient with aching and stiff muscles or joints and with no or minimal articular puffiness, do not make a diagnosis of fibrositis if the sedimentation rate is elevated.
- Suspect early rheumatoid arthritis, especially if leukocytosis is present.
 - Suspect lupus erythematosus if leukopenia is present.
28. If a patient with supposed rheumatic fever and/or nephritis has leukopenia: Suspect lupus erythematosus.
29. If a patient with supposed rheumatic fever is associated with nephritis suspect: Lupus erythematosus.
30. When “rheumatic fever” is unaffected by salicylates within a few days, consider an alternative diagnosis:
- Subacute, febrile rheumatoid arthritis – most likely.
 - Acute gouty polyarthritis.
 - Lupus erythematosus disseminatus.
 - Gonorrheal arthritis.
31. Suspect gonorrheal arthritis: When an acute polyarthritis or polyarthralgia develops and soon becomes a monoarthritis.
32. In a case of documented genital gonorrhea with supposed gonorrheal arthritis which has not improved notably after 7 to 10 days of treatment with penicillin or sulfonamides, suspect: Post-gonorrheal rheumatoid arthritis.
33. When arthritis develops and continues during pregnancy suspect: Some type other type than rheumatoid arthritis, such as gonorrheal arthritis.
34. When arthritis develops in early postpartum, suspect activation or reactivation of:
- Rheumatoid arthritis.
 - Lupus erythematosus.
 - One of the other “rheumatic or collagen inflammations” subject to post-steroid activations.
35. When arthritis develops during a significant jaundice (direct serum bilirubin over 4-5 mg percent) first consider some condition other than rheumatoid arthritis.
36. When roentgenographic “penciling” of phalangeal joints of fingers or toes is present (“pencil-in-cup” or “pencil-in-pencil” phenomenon) suspect:
- Psoriatic arthropathy
 - Main-en-lorgnette
 - Some other arthropathy such as leprosy, syringomyelia.
 - Very atypical rheumatoid arthritis.
37. In the presence of “rheumatism” that seems to require narcotics, suspect:
- Juxta-articular malignancy, probably metastatic.
 - Severe psychogenic rheumatism, from a marked psychoneurosis, or less commonly from psychosis. In many sites: psychoneurosis, in one site: malignancy.
38. When a “rheumatic patient” “aches all over”, hurts in every joint”, “aches from head to toes” and says, “nothing helps me, doctor”, suspect: Psychogenic rheumatism (psychoneurosis – chronic pain syndrome), primary or secondary type.
39. When aching muscles or joints probably ascribed to “fibrositis” or to “arthritis”, are not relieved even temporarily by the usual anti-rheumatic remedies, such as heat, massage, aspirin and, perhaps, cortisone, suspect:
- Psychogenic rheumatism if symptoms are disseminated.
 - Juxta-articular metastatic malignancy, if symptoms are localized.
40. When a patient with “severe rheumatism” demonstrates “aspirin futility” or “aspirin inutility”, suspect: Psychogenic rheumatism.
- Aspirin futility – “Aspirin never helps no matter how much I take”.
- Aspirin inutility – “Of course I use it doctor, I’ve used lots of it.”
- Doctor then asks, “When did you take it last and how much did you use?” Patient says, “Well not for several weeks, but a couple of tablets didn’t do a thing.”

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