Arthritis approach

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Patient history

- If the pain is stemming from the joint, the following 3 broad categories of joint disease must be differentiated :

- Inflammatory arthritis
- Noninflammatory arthritis
- Arthralgia

- **Inflammatory arthritis** is characterized by inflammation affecting joint structures, such as the synovium, synovial cavity, and entheses.
- **Noninflammatory arthritis** is joint disease resulting primarily from alterations in the structure or mechanics of the joint. ***The joint disease may occur as a result of either (1) cartilage or meniscal damage with or without concomitant alterations in the structure of the subchondral bone or (2) alterations in joint anatomy caused by congenital, developmental, metabolic, or past inflammatory diseases.***
- **Arthralgia** ***is characterized by joint tenderness, but abnormalities of the joint cannot be identified. Such patients may have a syndrome of altered pain sensation (eg, fibromyalgia) or an early rheumatic syndrome whose clinical signs are not yet apparent or are too subtle for detection (eg, arthralgia of systemic lupus erythematosus [SLE]).***

Some practical points

- Pain that arises from small peripheral joints tends to be more accurately localized than pain arising from larger proximal joints. For example, pain arising from the hip joint may be felt in the groin or buttocks, in the anterior portion of the thigh, or in the knee.
- Fatigue **is usually synonymous with exhaustion and depletion of energy in patients with arthritis. With** inflammatory polyarthritis, the fatigue is usually noted in the afternoon or early evening**. With** *psychogenic disorders, the fatigue is often noted upon arising in the morning and is related to anxiety, muscle tension, and poor sleep.*

- With an ***abrupt onset, joint symptoms develop over minutes to hours***. This may occur in the setting of **trauma, crystalline synovitis, or infection.**
- **Synovial hypertrophy is the most reliable sign of an inflammatory arthritis.**
- **Pain not present throughout the entire range of motion may indicate an extra-articular source, such as tendinitis.**
- **The examiner should palpate with enough pressure to blanch his or her thumbnail. This ensures that the assessment of joint tenderness is uniform. Application of this amount of force during palpation should not cause pain in a normal joint.**
- **In the elbow, assess for flexion deformity (ie, inability to fully extend); this may be an early sign of an inflammatory arthritis.**

- For the **cervical spine**, ask the patient to touch the chin to the chest (flexion) and then look up at the ceiling (extension). For lateral flexion, ask the patient to touch an ear to the shoulder. For lateral rotation, ask the patient to touch the chin to a shoulder.

  During lateral rotation and flexion, **pain that occurs on the ipsilateral side of the neck is bony in origin (eg, from apophyseal joint disease**), whereas pain on the contralateral side is muscular or ligamentous in origin.

- For the **lumbar spine**, assess flexion, extension, and lateral flexion.
- **Pain upon extension** suggests **pathology in the posterior elements of the spine (eg, facet joints or neurogenic compression seen with spinal stenosis). Pain upon flexion suggests disc disease. Lateral flexion** is **restricted early in the course of ankylosing spondylitis.**

- For the **Trendelenburg test**, the patient is asked to stand and bear weight on only the involved leg. If the contralateral pelvis drops below level, then weakness of the hip abductor (ie, the gluteus medius) is present on the affected side. **Weakness of the hip abductor** is a sign of **hip arthritis**. It can also have a **neurogenic (eg, L5 root disease) or myogenic cause.**

History parameters consisted of the following:

- Joint symptoms of recent onset (duration < 1 year)
- Symptoms located in MCP joints
- Duration of morning stiffness ≥60 min
- Most severe symptoms present in the early morning
- A first-degree relative with RA

Physical examination parameters consisted of the following:

- **Difficulty with making a fist**
- **Positive squeeze test of MCP joints**

A sensitivity > 90% was obtained in the presence of ≥3 parameters and a specificity > 90% in the presence of ≥4 parameters

Processes associated with acute polyarthritis include the following:

- Rheumatic fever (see Acute Rheumatic Fever)
- Gonococcal arthritis
- Polyarticular gout (see Gout)
- Polyarticular pseudogout
- Viral arthritis (eg, hepatitis B infection, parvovirus B-19 infection)
- Bacterial endocarditis (see Infective Endocarditis)
- Rheumatoid arthritis
- Still disease (systemic-onset juvenile idiopathic arthritis)
- Systemic lupus erythematosus (SLE) [20]
- Reactive arthritis [21]
- Acute sarcoid arthritis
- Familial Mediterranean fever
- Enteropathic arthropathies

CRP

- The CRP level is a nonspecific measure of inflammation and is obtained as an alternative to obtaining the ESR. In contrast to the ESR, the CRP level (1) **can be measured on frozen serum**, (2) is not influenced by the presence of anemia or hyperglobulinemia, (3) rises more rapidly in response to an inflammatory stimulus, and (4) **may require more time for the laboratory result to be available (ie, more than 24 hours, as opposed to 1 hour for the ESR).**

Screening tests for acute polyarthritis include the following:

- *Blood cultures*
- *Antistreptolysin O titer*
- *Parvovirus B-19 immunoglobulin G (IgG) and immunoglobulin M (IgM) levels*
- *Hepatitis B serology*
- *ANAs*
- *Others – Additional tests that may be considered are an HIV test, a rubella titer, an angiotensin-converting enzyme (ACE) level, chest radiography, and an antineutrophil cytoplasmic antibody (ANCA) test*

Screening tests for chronic polyarthritis include the following:

- *Complete blood count (CBC)*
- *ESR and CRP level*
- *ANAs*
- *RF and CCP antibody*
- *Chemistry profile, including liver function tests (LFTs) and a serum creatinine level*
- *Serum uric acid level*
- *Urinalysis*
- *Others – Additional tests that may be considered are a thyroid-stimulating hormone (TSH) level, a serum ferritin level, and iron saturation of serum transferrin*

Screening tests for diffuse arthralgias and myalgias include the following:

- *ESR and CRP level to exclude inflammatory disease (eg, polymyalgia rheumatica)*
- *Creatine kinase and aldolase level to exclude myositis*
- *Thyroid testing*
- *Chemistry profile (ie, calcium, phosphorus, electrolyte, glucose, and total protein) to exclude metabolic or endocrine disorders*

Distinctive features of CPPD on radiology include the following:

- *Involvement of joints not usually affected by osteoarthritis (eg, metacarpophalangeal (MCP) joint, wrist, elbow, ankle, and shoulder)*
- *Involvement of specific joint compartments (eg, the radiocarpal and trapezioscaphoid joints of the wrists, the patellofemoral joint of the knee, and the talocalcaneonavicular joint of the midfoot)*
- *Prominent subchondral cysts*
- *Occasional articular destruction (resembling a neuropathic joint) with subchondral bone collapse and fragmentation and formation of intra-articular loose bodies.*

In a patient with a painful joint, CT is most useful for the following applications:

- *Assessing trauma of the spine and pelvis*
- *Evaluating arthritis in axial joints (eg, sacroiliac, atlantoaxial, and sternoclavicular)*
- *Evaluating pain in complex joints in which overlying structures obscure plain radiography views (eg, ankle, wrist, and temporomandibular joints)*
- *Evaluating degenerative disc disease of the spine and possible disc herniations*

Synovial fluid types are classified into 5 categories as follows:

- ***Normal*** *– Characteristics include clear to pale yellow color, transparent clarity, white blood cell (WBC) count lower than 200/µL with less than 25% polymorphonuclear (PMN) leukocytes, and very high viscosity*
- ***Noninflammatory (group I)*** *– Characteristics include pale yellow color, transparent clarity, WBC count of 200-2000/µL with less than 25% PMN leukocytes, and high viscosity; this category typifies osteoarthritis, traumatic arthritis, and an early or resolving stage of an inflammatory arthritis*
- ***Inflammatory (group II)*** *– Characteristics include yellow-to-white color, translucent-to-opaque clarity, WBC count of 2000-50,000/µL with more than 70% PMN leukocytes, and low viscosity; this category typifies rheumatoid arthritis (RA) and other chronic inflammatory arthritides*
- ***Septic (group III)*** *– Characteristics include a white-to-cream color, opaque clarity, WBC count higher than 50,000/µL with more than 90% PMN leukocytes, and very low viscosity; this category typifies bacterial arthritis, but the fluid type also may occasionally be seen in crystalline arthritis and flares of RA*
- ***Hemorrhagic (group IV)*** *– Characteristics include a hemorrhagic color and opaque clarity; fat globules should be sought in hemorrhagic fluids by centrifuging the synovial fluid (a supernatant of fat is indicative of a juxta-articular fracture)*

The conditions that synovial histology may be diagnostic, include the following:

- ***Various granulomatous arthritides (eg, tuberculous arthritis, fungal arthritis, and sarcoidosis)***
- ***Amyloidosis***
- ***Synovial tumors***
- ***Ochronosis***
- ***Hemochromatosis***
- ***Multicentric reticulohistiocytosis***

Further reading

- The Approach to the Painful Joint Updated: Dec 21, 2019 Author: Alan N Baer, MD; Chief Editor: Herbert S Diamond, MD more...medscape
- European League Against Rheumatism definition of arthralgia suspicious for progression to rheumatoid arthritis

The following additional tests may be considered in certain patients with diffuse arthralgias and myalgias:

- *25-hydroxy vitamin D level (in elderly housebound individuals, to exclude osteomalacia)*
- *Sacroiliac joint radiography (to exclude ankylosing spondylitis, especially in woman younger than 45 years with neck, chest wall, and low back pain)*
- *HLA-B27 (to support a diagnosis of reactive arthritis)*
- *Hepatitis B and C serology testing*
- *Serum and urine protein electrophoresis (to exclude multiple myeloma)*
- *ANA and RF (if clinical features suggest RA, SLE, or another connective-tissue disease)*