Assesment of a Patient with Joint Pain

Whenever a patient presents with a problem joint, the primary care physician has to picture ALL the structures that make up a joint. Any one or more of the following may be involved:

- Bone(s) and/ or their articular surface(s)
- Cartilage
- Ligaments/ Tendons
- Muscles/ nerves and
- Synovial membrane

Like any other organ complex, the pathophysiology in a problem joint may be due to

- Trauma
- Degenerative changes
- Infection: both acute and chronic and Neoplastic

To complete the list, metabolic (gout) & neoplastic causes also have to be kept in mind. On the other hand, the joint may be affected as part of a widespread systemic disease – Rheumatoid arthritis and other seronegative spondyloarthropathies.

When a patient presents with any joint pain, it is the duty of the physician to assess the entire locomotor system:

Establish the Extent of Ability or Disability to carry out routine, day-to-day chores. Eg in rheumatoid arthritis can she open/ shut a zip or unbutton her blouse; what are the activities which are not possible now and should be our first target at improvement.

Ask the patient:

1. Can you climb stairs?
2. Can you dress normally?
3. Are you free from any muscle stiffness any where in the body?

If the answer is No, go into details and if the answer is yes, it is unlikely that the patient has any significant involvement/ affliction of a joint/ muscle group.

Observe:

Ask the patient to disrobe as much as is comfortable for both the physician and the patient. Ideally patient should be in undergarments. Stand away from the patient and observe closely as the patient carries out your instructions.

1. Observe the patient from behind to
   a. Assess the buttocks, shoulder, paraspinal muscles. Are they symmetrical? Is there any deformity or swelling?
   b. Is the spine straight or tilted/ curved to one side?
2. Observe from side
   a. Are cervical and lumbar curvatures normal?
3. Ask the patient to touch the toes.
   a. Is the flexion of hip and spine normal? (ie whether he can touch the toes)

From the front

4. Tilt head both ways – checks lateral flexion of the neck.
5. Open and close the mouth – Temporo-mandibular joint
6. Ask to put hands behind the head – tests glenohumeral and sterno- clavicular movements.
7. Ask to hold arms straight – tests elbow extension
8. Ask to supinate and pronate the hands
9. Ask to spread the fingers and show you the hands – look for any wasting, deformity or swelling(s)
10. Ask to put thumb and index finger together – checks pincer grip
11. Closely observe the legs – quadriceps bulk, any deformity or swelling?

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12. Knee joint – any effusion by patellar tap
13. Observe feet – any deformity? Any callosities?
14. Ask to walk around – is the gait normal? Are the arms swinging while walking?

Is the strike of heel on the ground as well as lift of toes from the ground normal?
Can he turn quickly and normally?

With practice, all of this is likely to take a max of 5 minutes and will be really rewarding, both while assessing the severity initially and monitoring progress later on.

One should always document the entire locomotor system of the patient, whatever the presentation. The easiest way to do this is:

	Appearance	Movement
Upper limb		
Lower limb		
Spine		

Gait – Normal or otherwise; if not normal describe in detail.
Any abnormality should be written down. It may come handy in future. ❑

Osteoarthritis

Osteoarthritis, as part of the normal ageing process, is the commonest form of arthritis and is characterized by degeneration of the cartilage with associated overgrowth of bone at the margins of the joints and changes in the synovial membrane. It affects up to 10% of the world's population and typically occurs more commonly with age.

Osteoarthritis is most likely to affect the joints that receive most use or stress over the years.
It commonly involves:

- The distal IP joints of the fingers- to form bony swelling - the Heberden nodes
- The proximal interphalyngeal finger joints -to form bony swelling - the Bouchard nodes.
- The cervical spine - cervical spondylosis.
- The lumbar spine - lumbar spondylosis.
- The large joints - including Hips and Knees.

Pathophysiology:
Osteoarthritis is caused by disintegration of the cartilage that covers the ends of bones. As the cartilage wears away → the roughened surface of bone is exposed → pain and stiffness. In severe cases the centre of the bone wears away and a bony ridge, which can restrict movement, is left around the edges.
There is a tendency to fissuring of the cartilage, with erosion of the surface. Ultimately the cartilage wears through to the bone and there is poor apposition of opposite joint surfaces. The joint margins develop enlarging protuberances - called osteophytes. It is the osteophytes that are responsible for the apparent swelling of the joints. The osteophytes are permanent and progressive. However, inflammatory flares can occur with mild soft tissue thickening of the joints - which cause temporary swelling.
Although less crippling than rheumatoid arthritis, osteoarthritis produces its fair share of suffering. Symptoms of OA may vary from mild to severe, depending on the amount of degeneration that's taken place. The characteristic feature of degenerative joint disease is mechanical problem. The inflammatory reaction within the joint - whilst present, is of very low grade and the symptoms in general are different from the inflammatory arthropathies such as rheumatoid arthritis.

Mechanical symptoms are characterized by:

- Pain: The pain is usually worse through the day and

increases with activity. It is usually relieved by rest. Night pain may be a feature. Pain on weight-bearing, if the lower limb joints are involved.

- Stiffness after rest: usually lasting less than 5 minutes - with the patient loosening up quickly by moving the joints. Morning stiffness is not a prominent feature and short lived if present at all.
- Swelling is usually bony rather than soft tissue in character.

Risk factors:

- Age.
- Obesity
- Repetitive stress injury / trauma to joints.
- Sex - Females are more frequently involved (10:1)
- Genetics - this is a problem often seen within families.
- Other diseases causing cartilage damage - resulting in secondary osteoarthritis

THE EXAMINATION

This reveals the characteristic bony swellings and the feeling of crepitus - a sensation of fine crackling within the joints on movement in the classically affected joints. A small degree of soft tissue thickening may be seen. The joints may be locally tender.

IMAGING IN OSTEOARHTRITIS:

Osteoarthritis is a degenerative condition affecting joints, especially weight bearing joints or those more subjected to "wear and tear". The disease may be "primary" when no underlying cause is found, or "secondary" where the joint was already abnormal i e joints where severe trauma has occurred or past H/O infections.

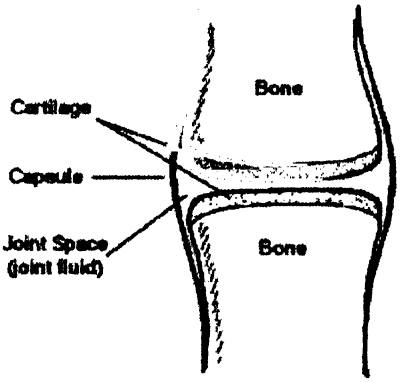
Osteoarthritis anywhere in the body has a number of common radiologically specific features.

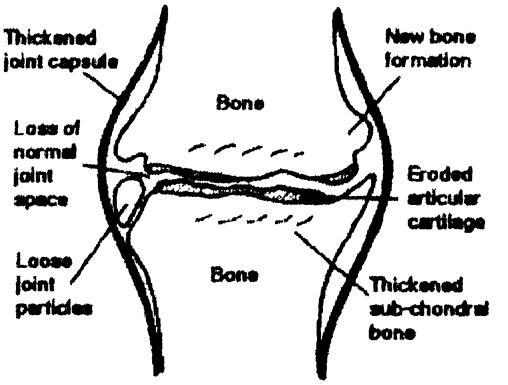
a. Joint space narrowing seen due to cartilage destruction, characteristically occurs in areas of excessive weight bearing.
b. Joint space remodeling follows destruction of the cartilage. The joint alignment is altered with formation of new bone and cartilage in the non-stressed areas resulting in formation of peripheral osteophytes.
c. Cyst formation may also be seen, along with subchondral sclerosis.
d. Detached osteophytes or ossification of the cartilagenous debris forms loose bodies.

Only when osteoarthritis results in pain and immobility, secondary osteoporosis and soft tissue wasting is seen.

Osteoarthritis of the knee:

Most commonly affected joint found in clinical prac-





tice. Joint space narrowing with osteophytosis (new bone formation) and loose bodies are seen. The patellofemoral articulation is the most commonly affected with medial tibiofemoral compartment being second. In early disease, spiking of the tibial tubercles and marginal osteophytes are seen. See figs 1 & 2 for normal knee and severely arthrosed knee.

Standard A-P and lateral views can assess the joint adequately. The presence of varus deformity is best seen on the weight bearing (erect) A-P views. A skyline view is useful to assess the patellofemoral articulation. The assessment for loose bodies may require additional intercondylar (tunnel) views of the knee joint.

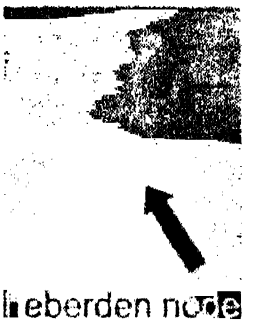
OSTEOARTHRITIS OF THE HIP

This is the second most affected joint in the body. Secondary osteoarthritis following congenital dysplasia, Perthe's disease, congenital dislocation, slipped epiphysis, aseptic necrosis etc is more common than primary osteoarthritis.

Joint space reduction and marginal osteophytosis are seen. The femoral head migrates either superiorly or medially. A-P views of the hip usually provide adequate information. In certain cases, a CT scan may show areas of subarticular crescents as in aseptic necrosis or geode formation in advanced cases.

OSTEOARTHRITIS OF THE HANDS:

In osteoarthritis, the distal interphalageal joints are most commonly affected with joint space narrowing and large peripheral osteophytes resulting in the clinically evident "Heberdens nodes".



Heberden node

MANAGEMENT

The concept of joint protection is vital for the patients with OA, especially where large joints are involved.

- Protection from overuse is important
- o Assistant devices to reduce weight bearing joint pain - ie canes
- o Reduce impact exercise like jogging. Increase non weight bearing exercise - ie swimming/ cycling
- o Good quality footwear, when walking recreationally.
- o If any leg length discrepancy, ensure it is corrected
- o Weight reduction is crucial especially in obese patients with large joint problems on weight bearing.
- o Physiotherapy will maintain joint protection through optimizing the strength of adjacent supportive muscles.
- o Heat and ultrasound may relieve muscle spasm.

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