
UNIT 2 DISEASES OF THE JOINTS

Structure

- 2.0 Objectives
- 2.1 Introduction
- 2.2 Degenerative Diseases of the Joints
 - 2.2.1 Osteoarthritis of Knee
 - 2.2.2 Osteoarthritis of Spine (Cervical and Lumbar Spondylosis)
 - 2.2.3 Osteoarthritis of Small Joints of Hand
 - 2.2.4 Osteoarthritis of Hip
- 2.3 Inflammatory and Metabolic Disorders
 - 2.3.1 Rheumatoid Arthritis
 - 2.3.2 Gouty Arthritis
 - 2.3.3 Chondrocalcinosis (Pseudogout)
 - 2.3.4 Nutritional Osteomalacia
- 2.4 Let Us Sum Up
- 2.5 Key Words
- 2.6 Answers to Check Your Progress
- 2.7 Further Readings

2.0 OBJECTIVES

After reading this unit, you should be able to:

- identify the degenerative disease of the joints in geriatric age group;
- differentiate between primary and secondary osteoarthritis; and
- describe inflammatory and metabolic diseases leading to secondary osteoarthritis.

2.1 INTRODUCTION

As the population grows older, the aging problems related to bones, joints and neuromuscular structures increases which naturally pose problem in the mobility. You will agree that first point of contact of an elderly patient is a medical practitioner, so they should have some knowledge and skills to identify and give adequate care and management to their orthopaedic problems. It is expected that you should be able to identify and pick up the different problems/diseases discussed in this unit. For comprehensive management of these diseases you may be required to refer the patients to a hospital/centre having all required facilities. You have already read about the neuromuscular problems in Unit-4 "Neuro-degenerative disorders" of block 4 of Course-2. In this unit you will learn some diseases of bones and joints which are commonly seen in elderly. By the end of this unit you will appreciate certain common bone and joint problems which are encountered in old age i.e. degenerative joint diseases, inflammatory and metabolic disorders. You will learn about these in the next unit.

You must be aware about the fact that the population of elderly persons is increasing all over the world and is growing disproportionately faster in the developing countries. It is expected that the population of elderly may go up to 10.8% of the total population of the world by 2025 A.D.

In your practice have you ever noted the number of patients over 60 years of age you are attending in your consultation chamber per day or per month. From now onwards, start keeping the records. You yourself will soon find the proportion of elderly patients seeking medical advice and its increasing trend.

2.2 DEGENERATIVE DISEASES OF THE JOINTS

You must have read about the term **osteoarthritis** in your graduation course. Osteoarthritis (syn. Osteoarthrosis, OA) is a degenerative disease of the synovial joints commonly associated with minor inflammatory features due to primary cartilage disorder. It is by far the commonest form of arthritis in the elderly. The reported prevalence of OA in India is 5.7%, accounting for 30% of rheumatological problems. OA is characterized by a slowly progressive deterioration of a joint in which there is localized loss of cartilage, subchondral bone thickening (sclerosis), osteophyte formation and synovial thickening. Commonly affected joints are knee, small joints of hand, spine and hip. In general, usual sign and symptoms are pain, early morning joint stiffness, limitation of joint movements and swelling. Pain on passive motion and crepitus are also seen in later stages.

Radiologically you may find narrowing of joint space, sclerosis of adjacent bone and marginal osteophytes. The principle aims of treatment are protecting joints from excessive loading and stress, improving joint motion and stability and reducing pain and stiffness.

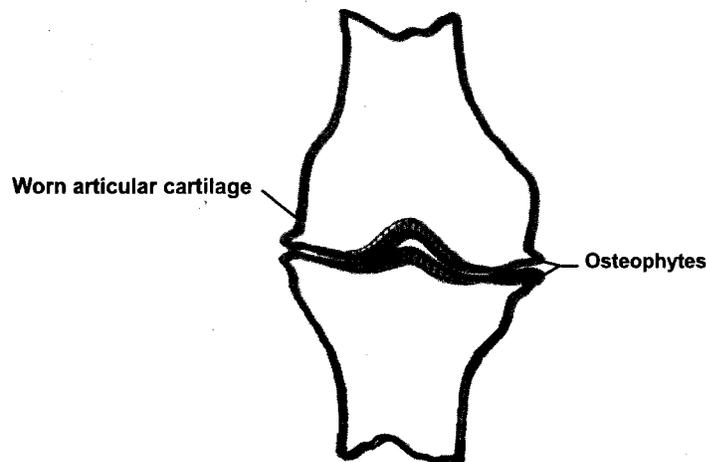


Fig. 2.1: Osteoarthritis

Traditionally OA has been divided into two main types:

- 1) **Primary (Idiopathic) OA:** It is a disease of elderly people and develops gradually without having any known cause. Certain risk factors are attributed to it.
- 2) **Secondary OA:** Its onset is in early or young age. It is always secondary to some underlying disease or trauma.

Risk Factors of Primary OA

- i) **Age:** A major risk factor. About 2/3 of women over 65 years of age are affected with OA
- ii) **Sex:** More common in females than in males after 50 years of age
- iii) **Heredity:** Women with family history positive of OA are 2-3 times more affected than those who do not have. Involvement of distal interphalangeal joints is more in females due to inheritance of single autosomal dominant gene which is recessive in males.
- iv) **Excessive load:** In obese people, ballet dancer and footballers, OA of knee and hip is more common.

Causes of Secondary OA in Elderly

- i) **Trauma:** May be acute or Chronic

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|-------------------------------|-----------|--|
| ii) Bone and Joint Diseases : | Localized | Old fractures, dislocation, Avascular necrosis, Infection Gout |
| | Diffuse | Rheumatoid arthritis |

iii) Neuropathic Arthritis : Diabetes mellitus, Leprosy, Syringomyelia, Tabes dorsalis

iv) Calcium Deposition Diseases : Chondrocalcinosis (Pseudogout)

When three or more joints are involved, it is called generalized OA.

When involvement affects a less usual site, in the absence of OA elsewhere, you should think for secondary OA in an elderly person. In this section you will read about common conditions of Primary OA, which you will mostly encounter in elderly population.

2.2.1 Osteoarthritis of Knee

In India primary OA of knee is more common than secondary OA (as against the hip where secondary OA is commoner than primary). It could be related to excessive squatting activities in daily routine especially amongst women.

Common Causes of OA include wear and tear of articular cartilage, obesity, previous fracture or disease involving joint.

Clinical Features

The patient complains of slowly increasing pain in one or both joints, which worsen after unusual activity or after resting for a while. There may be difficulty in climbing stairs and standing up from sitting. On examination, you will find swollen knee and limitation of movements associated with grating sensations. In long standing cases, quadriceps muscle is also wasted and knee deformities like genu valgum and genu varum are produced.

Radiological Features

X-ray of knee shows reduced joint space, spiking of tibial spine and patellar margins, subchondral bone thickening, subchondral cysts and osteophytes formation at the joint margins.

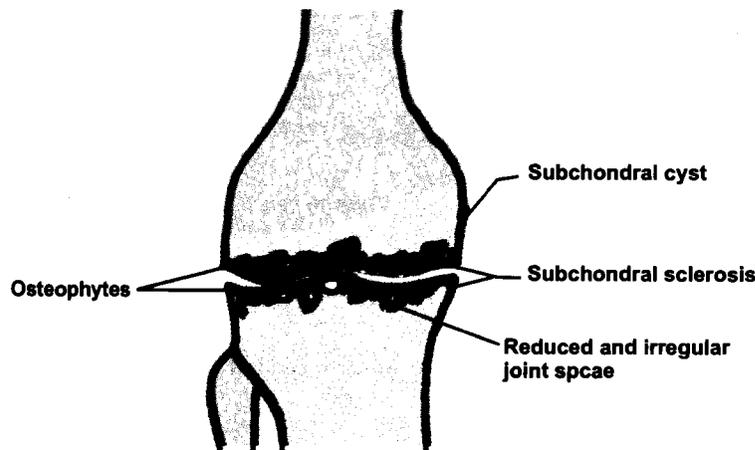


Fig. 2.2: Radiological features of Osteoarthritis of knee

Management

In early cases conservative management is done which includes:

- Modify activities of daily living (ADL) and work, if possible.
- Give mild non-steroidal anti-inflammatory analgesics to relieve pain and swelling.
- Active resisted knee exercises to strengthen weak quadriceps muscle and to preserve joint movements are the mainstay of the treatment.

- Local heat therapy in form of hot fomentation, paraffin wax bath & shortwave diathermy can be given daily for a few days.
- Use of walking stick to reduce the load on the joint and to give stability.
- Reduction of body weight, if patient is obese.
- Intra-articular injections of local hydrocortisone should be avoided as far as possible. It is indicated only in those intractable cases, where pain is not responding to any other conservative line of treatment.

Cases which are not relieved by conservative management should be referred to an orthopaedic surgeon for further surgical management.

2.2.2 Osteoarthritis of Spine (Cervical and Lumbar Spondylosis)

Next to commonest condition of OA knee, you might have observed in your out-patient department that old people often complain of dull aching pain and stiffness in the neck and the lower back without any known cause. Do not forget to look for OA of spine. Commonly involved joints are intervertebral and posterior intervertebral (facet) joints in cervical and lumbar region due to degeneration of intervertebral discs and cartilages respectively.

Osteoarthritis of Cervical Spine (Cervical Spondylosis)

This is a common condition seen in people passed middle age due to degeneration of mainly lower three cervical joints. Osteophytes formation in these joints cause compression of nerve roots in intervertebral foramina. The symptoms are produced in some patients because of soft tissue swelling at these joints, minor injury or neck strain and adopting wrong postures.

Clinical Features

Elderly persons present with complaint of pain in neck, sometimes radiating to shoulder, occiput, frontal region, between scapulae and down to one or both arms. There may be paraesthesia in hands. Some patients may have feeling of dizziness on sudden change of posture. On examination, you may find tenderness at the nape of neck, trapezius muscle, interscapular muscles and limitation of neck movement. The neck may be straightened. Audible crepitus on moving the neck may be present.

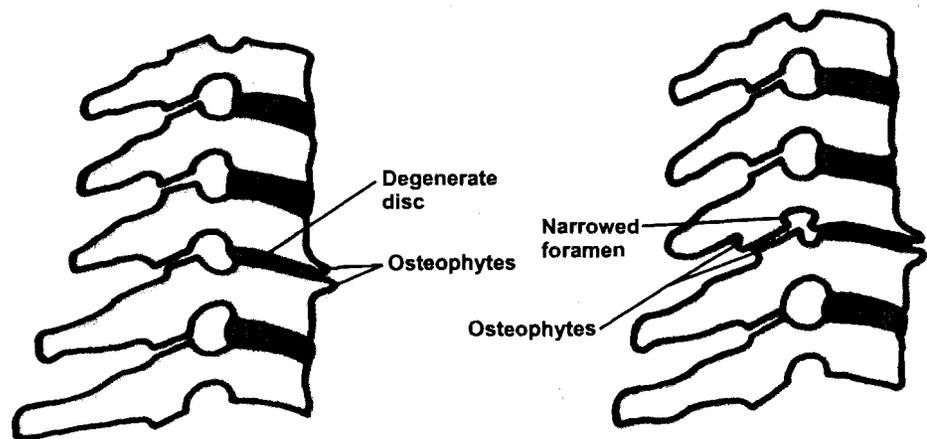


Fig. 2.3: Osteoarthritis of cervical spine

Radiological Features

In radiograph of cervical spine in lateral and oblique views, you can well appreciate the narrowing of intervertebral disc space, formation of osteophytes at margins of vertebral bodies and facet joints causing narrowing of intervertebral foramen.

Management

Usually the symptoms of cervical spondylosis subside spontaneously in some cases. In mild cases, analgesics are given along with the advise of maintaining proper neck posture while working. Improvement in neck posture can be done by adjusting height of the table and the chair. A thin pillow can be used below the nape of the neck to avoid prolonged flexion of the neck. Active and resisted neck exercises are demonstrated to give strength to the neck muscles.

Local heat therapy in form of hot packs, shortwave diathermy and ultrasonic massage are also helpful in relieving muscle spasm. When there is severe radiating pain with paresthesia in hands, cervical traction enhances the recovery from pain. Patients suffering from dizziness can be prescribed a cervical collar and rest. Manipulation is usually not recommended as it may sometimes cause more harm.

In exceptional cases in which the spinal cord or nerve roots are compressed due to osteophytes, decompression surgery is advisable. You can refer these cases to neurosurgeon for further management.

Osteoarthritis of Lumbar Spine (Lumbar Spondylosis)

OA of Lumbar spine is commonly seen in those elderly people who were used to do heavy work like lifting weight, working long hours in forward bent posture etc. in their earlier life. Other predisposing factors in earlier life may be a previous injury or disease. The degenerative changes in spine can be simply a manifestation of natural wear and tear of articular cartilage on account of old age. The changes are almost similar to degenerative changes discussed in cervical spondylosis.

Clinical Features

The elderly patient often complains of dull aching pain in the lower back, which becomes worse after bending forward or lifting some heavy weight. There can be history of morning stiffness in spine and pain while rising from the sitting position. In lumbar region there is tendency of acute exacerbation of pain and radiation to both lower limbs when nerve roots are compressed by osteophytes in intervertebral foramina.

On examination, you may find moderate restriction of spinal movements especially in flexion and there can be associated spasm of para-spinal muscles.

Radiological Features

The changes are similar to what has been discussed in cervical spondylosis i.e. narrowing of intervertebral disc spaces, anterior and posterior osteophyte formation leading to compression over nerve roots and spinal cord.

Management

It depends upon the severity of symptoms.

In **mild cases**, reassurance by explaining age related wear and tear in lumbar spine along with analgesic may usually suffice. In OA of thoracic spine, the symptoms are seldom severe, and only active spinal extension exercises, which strengthens the spinal muscles, may relieve the symptoms.

In **moderate cases**, lumbar corset is used to stabilise the spine and give relief from pain. Besides, spinal extension exercises, electrotherapy/heat therapy and lumbar traction can be of great help in relieving radiating pain in lower limb. Sometimes, the lumbar spondylosis may present as degenerative lumbar canal stenosis, which may require surgery.

2.2.3 Osteoarthritis of Small Joints of Hand

The metacarpo phalangeal (MCP) joints and the interphalangeal (IP) joints of the hand are frequently the site of OA in elderly. In most cases such manifestations do not require any treatment except assurance. Carpometacarpal (CM) joint of thumb (trapezio metacarpal) and the interphalangeal joints (IP) of the fingers, are commonly involved in old age. Hot fomentation in the morning, followed by active and passive exercises of IP, MP and wrist joints give sufficient painless mobility to hands of old persons for whole day.

OA of the 1st Trapezio Metacarpal Joint

This is a common affection in women beyond middle age but it may also occur in younger persons, especially when there has been previous injury such as a fracture of base of first metacarpal bone involving the joint.

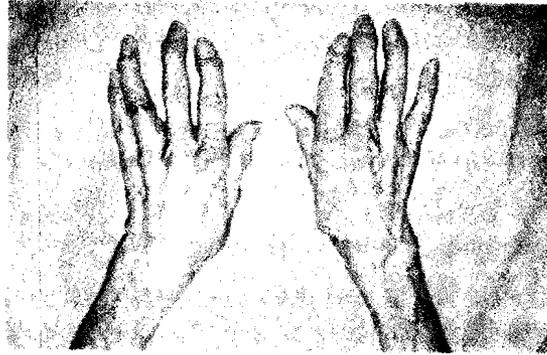


Fig. 2.4: Osteoarthritis : OA : Distal Interphalangeal Joint deformities and hand 'squaring' (carpometacarpal arthritis of thumbs)

Clinical Features

There is localized pain and tenderness over the base of the thumb. There is difficulty in moving thumb especially when sewing, knitting or carrying out household activities with the involved hand. The joint becomes prominent and slightly thickened.

Radiological Features

Radiographs show narrowing of the cartilage space and spurring of bone at the joint margin.

Management

In early stages the condition is best left alone. In later stages, where pain does not subside with analgesics and ultrasonic massage, hydrocortisone injection with xylocaine into the joint may give some relief.

If the symptoms become disabling in elderly person, removal of Trapezium (Excision Arthroplasty) is sometimes indicated.

OA of IP Joints

This is a part of generalized OA especially in females past middle age. There is a familial tendency (heredity) of simple autosomal dominant trait in females. The affection on these joints is probably related to stress and strain of working amongst females in house-hold activities.



Fig. 2.5: OA : Heberden's nodes

Clinical Features

The patient presents with pain and stiffness in early stage. Later there may be tender nodular swelling of distal IP joints (Heberden's nodes). When proximal IP joints are involved with similar swellings, the deformity is called Bouchards node.

Radiological Features

Radiologically typical OA changes are seen in the joint with characteristic osteophyte formation.

Management

It is same as for the OA of other joints. Since multiple fingers are involved, hot saline fomentation and paraffin wax bath of hand followed by joint mobilizing exercises may give worth-while relief.

2.2.4 Osteoarthritis of Hip

Primary OA of hip is rare in India, but secondary OA following avascular necrosis of femoral head (after hip dislocation, femoral neck fracture), fractures of acetabulum, perthes, diseases and slipped upper femoral epiphysis is common. The patients of primary OA are usually elderly while those of secondary OA are usually middle aged. The cause of primary OA is wear and tear of articular cartilage due to aging process.

Clinical Features

The elderly patient may have gradually increasing pain in the groin and front of thigh. The pain increases on walking and is relieved by rest. Later, there may be stiffness and limitation of movements at hip which causes difficulty in carrying out the activities of daily living. The symptoms progress to the extent of severe painful limp.

While examining the patient, you may find marked limitation of adduction, extension and rotation but good range of flexion movement at hip is often preserved. Passive movements are painful. Fixed deformity (flexion, adduction or lateral rotation or a combination of these) is common.

Radiographic Features

The changes are characteristic of OA. There is diminution of the joint space, with tendency of subchondral sclerosis and osteophyte (spurring) formation at the joint margins.

Management

Usually in mild, and moderate cases, conservative treatment should be continued as long as patient can manage. This includes:

- Relative rest by modification of life-style like change of occupation or adjustment of duties so that the load on the hip is reduced.
- Use of a stick (cane)
- Correction of shortening, if present, by a shoe raise also give considerable relief.
- Mild analgesics especially when pain disturbs sleep
- Local deep heat by short wave diathermy and exercises to strengthen the muscles and to preserve joint motion.
- Reduction of weight if patient is obese
- Intra-articular injection gives temporary relief in pain. It should better be avoided.

When pain, limp and limitation of movements become intolerable in elderly patients, T.H.R. (total hip replacement) is usually recommended.

Check Your Progress I

1) What is osteoarthritis?

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2) How will you differentiate between Primary OA and Secondary OA?

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3) Enlist the common joints affected by Primary OA.

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4) Enumerate main clinical features of OA.

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2.3 INFLAMMATORY AND METABOLIC DISORDERS

In this section you will read about some inflammatory and metabolic conditions leading to secondary osteoarthritis in old people.

Inflammatory diseases like rheumatoid arthritis, gout and chondrocalcinosis (pseudogout) are the diseases which can present as degenerative bone disease in old age. These diseases, usually have their onset in adult life but in old age, sometimes, they can occur as a fresh disease with late onset or may appear as super imposed secondary O.A. in a 'burnt out' form of old diseases like rheumatoid arthritis.

Metabolic diseases like nutritional osteomalacia and osteoporosis are also commonly seen more in elderly women than men. Osteoporosis is the commonest metabolic bone disease of the elderly, characterised by reduced bone density and sequelae of fracture. Osteomalacia is not far behind osteoporosis and may occur in conjunction with it in elderly population as a result of dietary inadequacy. You have read about osteoporosis in detail in your 1st unit of this block.

2.3.1 Rheumatoid Arthritis

Rheumatoid Arthritis (RA) is the most common type of chronic inflammatory arthritis. Exact aetiology of the disease is not known but it is thought to be due to an auto-immune mechanism which is probably precipitated by stress, endocrinal disturbance, allergy and infection. The peak incidence of RA is between 35-45 years of age, more in women but beginning of disease in old age is not unusual.

Most elderly patients with RA have lived with the disease since young or middle age. In many cases, the disease is no longer active and the patient presents with functional disability due to deformities or secondary OA.

Pathological Process

The pathological process, which takes place in RA is in form of inflammatory thickening of synovial tissue and in due course of time subchondral bone is also eroded. In a similar fashion the synovial lining of tendon sheaths in hands and feet are also involved which may lead to rupture of tendons causing deformities in hands and feet.

Clinical Features

When RA has its onset after the age of 60, it starts acutely and is often of atypical form of the disease. It has a 'galloping' course affecting particularly the large joints in early stages, associated with systemic symptoms such as fatigue, anorexia, weight loss, anaemia and occasionally fever. Generalized stiffness may precede or accompany the insidious onset of symmetrical arthritis in small joints of hands, feet, wrists and knees.

On examination, you may find swollen joints, warm overlying skin and restricted joint movements which are painful in their extremes. In advanced cases, characteristic deformities like subluxation, dislocation and ankylosis can be seen. The disease when it occurs afresh in elderly persons, is less severe as compared to the onset in younger age. Rheumatoid nodules are also seen in about 25% cases, over bony prominences such as elbow and ulna. In about 25% of acute cases in old age, there is almost full recovery within 3-18 months and they have better prognosis. Remissions and exacerbations are common.

The coexistence of chronic RA and OA sometimes poses diagnostic difficulties in elderly. Rheumatoid involvement in the hands is generally in the proximal IP joints, metacarpophalangeal joint and wrist joints where as OA affects distal IP joints mainly.

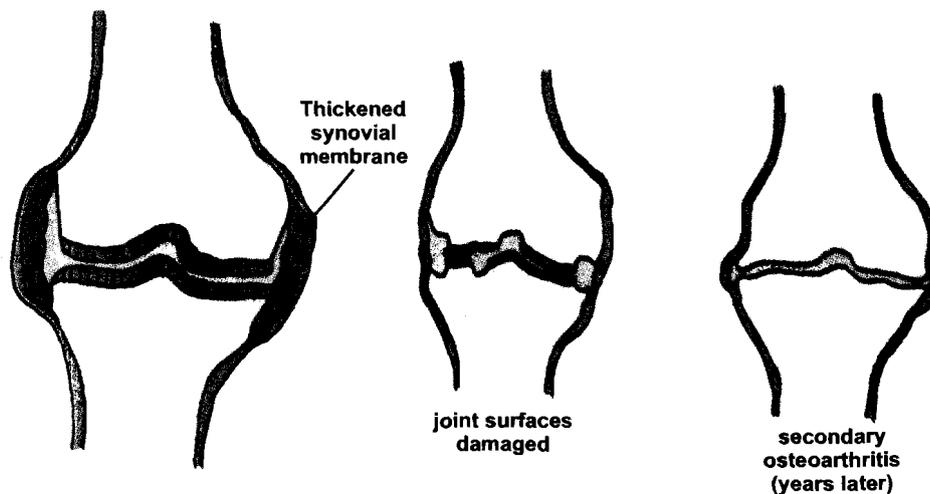


Fig. 2.6: Rheumatoid arthritis

Radiographic Features

In early stages, the involved joints usually reveal soft tissue swelling and osteoporosis at bone ends. In late stages, there can be narrowing of joint space, erosion of subchondral bone and ankylosis. There is no osteophyte formation on account of RA, however secondary degenerative arthritis or burnt out RA may show osteophytosis.

Investigations

There is mild anaemia, leucocytosis and elevated erythrocyte sedimentation rate (ESR). The elderly patients are more often seronegative for Rheumatoid factor and the synovial fluid after aspiration is usually found turbid with increased cell count.

Differential Diagnosis

RA has to be differentiated mainly from polyarticular gout and chondrocalcinosis. These conditions are discussed later in this section.

Management

The management of RA occurring de novo in elderly follows the same guidelines as in young patients. The main objectives are to reduce inflammation, relieve pain and preserve muscle and joint function. Most of the patients can be managed by conservative measures, which are:

- 1) **General Measures:** In acute stage, rest is beneficial to reduce inflammation. Splints are also used to keep the joints in functional position. In between the periods of rest gentle mobilizing exercises of involved joints are essential. Adequate diet containing vitamins and minerals must be ensured. Sometimes haematinics are prescribed to treat anaemia. If there is detection of infection any where in the body, immediate appropriate treatment is necessary.
- 2) **Drugs:** Three major classes of drugs are available in treatment of RA which are Non-steroidal anti-inflammatory drugs (NSAIDS), Corticosteroids and disease modifying agents (Second-line drugs).
 - a) **NSAID:** The elderly persons frequently take multiple drugs for other chronic ailments like diabetes, hypertension. So, to avoid drug interactions, low doses of NSAIDS are given in elderly. Commonly used NSAIDS are – Ibuprofen, Naproxen, Diclofenac, Piroxicam, Nimusilide etc.
 - b) Disease modifying agents are D — penicillamin, chloroquin and gold salts. These drugs are toxic and should be avoided in general, otherwise, they are always given under medical supervision in relatively low doses. Methotrexate and salazopyrin and other drugs used as DMRDS.
 - c) Corticosteroids are indicated in patients with high fever and in extra articular manifestations of R.A. Intra-articular steroid therapy can be useful in elderly patients, when other measures fail. Doses are usually low and duration of medication is also short.
- 3) **Local Care of Joints:** It can be given as rest in bed, sometimes by traction or splints. Rest in bed is advocated in acute polyarticular RA involving bigger joints also, otherwise splints are sufficient to provide rest to hand and feet in acute polyarticular RA involving small joints only. Traction is usually advised when there is involvement of one big joint like knee or hip. Moist heat therapy in form of paraffin wax bath (localized RA), steam bath (generalize RA), and SWD. Exercises (active and passive) should be carried out many times a day (within limit of tolerance) to improve joint motion. In late stage, deformities are treated very carefully by traction and serial wedging plaster casts.
- 4) **Surgery:** Surgery is usually not carried out in old age. If at all required, synovectomy, soft tissue release and total joint replacement are the procedures available as per the individual need of the elderly patient.

Check Your Progress 2

- 1) Define Rheumatoid Arthritis.

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- 2) Enumerate common precipitating factors.

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3) Describe radiological features of Rheumatoid Arthritis.

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4) Enumerate disease modifying agents (DMARD) used in treatment of Rheumatoid Arthritis.

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5) Enlist the common joints involved in rheumatoid arthritis.

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2.3.2 Gouty Arthritis

Fresh onset of acute gouty arthritis is common among the elderly. Most of these patients have hyperuricemia (increased serum uric acid) on the basis of decreased urinary excretion of uric acid. This is related to the effects of diuretic therapy in elderly for hypertension, hypertriglyceridemia, and mild renal failure. Diuretic use in these patients is a major cause of gouty arthritis. Less commonly, gout is secondary to over production of uric acid due to increased turnover of cells in myeloproliferative disorders like leukemia, haemolytic anaemia and other blood dyscrasias seen in younger age.

The precise cause of this disease is not known. There is an inherited predisposition to the disease. In susceptible persons, gouty attack may be precipitated by excessive consumption of purine rich food such as seeded vegetables, liver, kidney, sweet breads, shellfish, beer or wine, alcohol and recent injury or operation.

Clinical Features

You will appreciate the fact that the presentation of gout in elderly differs from the classic picture of single joint involvement (MP joint) of great toe as seen in younger patients. It is frequently poly articular, subacute or chronic in onset and lesser in severity. Men and women appear to be affected equally.

In women, the first manifestation of gout may be acute inflammation of I.P. joints. Heberden's or Bouchard's nodes. Many of them may have underlying OA and tophi formation. In elderly men, besides involving great toe, the disease may involve other joints like elbow and knee. The tissue around the joint become red, swollen and oedematous. After repeated attacks, deposition of sodium biurate crystals take place in articular cartilage close to the surface. The ligaments and bony ends are also infiltrated by these chalky deposits which appear as swellings

or tophi (in cartilage of the ear). The ulceration of overlying skin results in a chalky discharge. There is agonizing pain in the joint which limit the movements.

Gout should be excluded whenever there is longstanding arthritis of one or more joints with periodic exacerbation and few radiological changes. Whenever you are in doubt "always think" of gout.

Radiograph

The first sign is the thickening of soft tissue only. Later 'punchedout' areas appear in the bone adjacent to the joint and ultimately on the articular surfaces. Tophi appear as dense shadows in X-Rays.

Laboratory Investigations

Serum uric acid level is raised (normal is 2-6 mg/dl) during acute attack, sometimes leucocytosis and raised ESR are also seen. Aspiration of joint fluid yields small quantity of turbid fluid but never organisms. Needle shaped **birefringent** crystals of sodium urate or tophaceous material are seen in synovial fluid under polarised light microscopy in about 95% cases of acute gouty arthritis.

Differential Diagnosis

Acute Gouty Arthritis has to be differentiated from acute pyogenic arthritis, pseudogout (which will be discussed later), chronic polyarticular gout i.e. tophi may be misdiagnosed as rheumatoid nodules.

Management

It will depend upon the stage of the disease. For acute attacks, NSAIDS like Indomethacin, Naproxen, Piroxicam, give better relief. Colchicine is also effective but requires monitoring for toxicity. The affected joints should be rested with splintage until the acute attack has subsided. A large effusion in a major joint like knee should be aspirated followed by instillation of hydrocortisone to give comfort to the patient.

For patients with frequent attack or with chronic gout especially when serum uric acid is persistently raised, long-term therapy with allopurinol drug (which reduces formation of uric acid by inhibiting enzyme xanthine oxidase) is started till no toxic effects are observed. This drug does not cause any urine stone formation.

Prevention of acute attacks can be done by taking low purine rich diet and changing the life style. In obese patient, weight reduction is quite helpful. Non-diuretic drugs may be preferred to treat hypertension.

2.3.3 Chondrocalcinosis (Pseudogout)

Pseudogout is a condition that resembles gout in its clinical manifestations except that large rather than small joints are more commonly involved. It is characterized by the deposition of calcium pyrophosphate dihydrate (CPPD- $\text{Ca}_2\text{P}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$) crystal in the joint cartilage and capsule. This is the most common crystal associated arthritis in the elderly.

Exact aetiology is not known but the condition is frequently familial and is occasionally associated with diabetes, renal disease or other serious systemic conditions. As the age advances in elderly the prevalence of chondrocalcinosis increases correspondingly.

Clinical Features

The majority of patients with chondrocalcinosis remain free of symptoms. If symptoms appears, they are similar to those of chronic gouty arthritis. Usually it presents with single joint involvement. Intermittent acute episodes of acute synovitis occur but the joint most commonly affected is knee rather that great toe. Other joints like wrist, shoulder or elbow can also be affected.

Radiograph

There is calcification of articular cartilage especially of menisci is common. Calcification of annulus fibrosis, radioulnar disc and symphysis pubis may also be seen. Synovial fluid analysis reveals typical rhomboid-shaped crystals of CPPD that exhibit positive birefringence under polarised light. There are no specific changes in blood.

Management

In acute episode of synovitis NSAIDS are effective. If there is large effusion, aspiration of joint fluid and intramuscular injection of hydrocortisone is the usual method of treatment. Chronic pseudogout is managed in the same way as osteoarthritis.

2.3.4 Nutritional Osteomalacia

It occurs due to deficiency of vit. D. and calcium and is not frequently seen now a days except in extremely poor patients especially in elderly individuals with idiosyncratic dietary habits and persons with malabsorption syndrome. Muslim women are particularly vulnerable to osteomalacia as they are accustomed to use Burka, which prevent sun-rays.

Clinical Features

The main clinical features in elderly women are generalized bone and joint pains, especially backache, tenderness and muscular weakness in early stages. In long standing cases there may be kyphosis and kypho-scoliosis of spine and triradiate pelvis. (triangular pelvis). Because of softening of bone multiple undisplaced pathological fractures, are commonly seen.

Radiograph

There is rarefaction of bones (ground glass appearance), thinning of bone cortex, radiolucent lines (Looser's Zones) in ribs, pelvis, femoral neck and shaft in X-Rays. These are characteristic features of osteomalacia and they are not seen in osteoporosis. Vertebral bodies show codfish appearance and undisplaced pathological fractures in spinal X-Ray. Pelvis become triradiate in severe cases.

Investigations

Serum calcium is low or normal and phosphate level is low or normal. Serum alkaline phosphatase level is increased. Serum levels of 25-hydroxy vitamin D will be low. Bone biopsy from iliac crest show abundant osteoid tissue. The DEXA scan will also be able to give good information about mineral density.

Differential Diagnosis

Nutritional osteomalacia must be distinguished from senile osteoporosis by Dexa Scan or bone biopsy from iliac crest. In osteoporosis, bone biopsy will show well calcified thin trabeculae without any osteoid tissue.

Management

Adequate diet rich in calcium along with calcium supplements are basically required. The condition responds well with daily doses of Vit. D and skin exposure to sunlight. You are required to look for this problem especially in elderly women.

Check Your Progress 3

1) Give four common causes of secondary OA in elderly.

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2) Differentiate between Gouty arthritis and Chondrocalcinosis (pseudogout) in elderly by giving three features.

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3) What is the common nutritional cause of osteomalacia?

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4) What is pathogenic radiological features of osteomalacia?

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2.4 LET US SUM UP

In this unit you have learnt that the degenerative joint diseases are very often occurring in elderly persons, affecting mainly knee, spine, small joints of hand and rarely hip. Primary OA is more common than secondary OA in geriatric age group especially in females, which may be attributed to the persuance of risk factors. Subsequently you were also made familiar about common inflammatory conditions like Rheumatoid Arthritis, Gout and Pseudogout. RA in elderly usually occur in less severe form and the onset is more acute. It involves large joints initially in contrast to typical presentation of adult age. Gout and psendogout can also be differentiated on the basis of clinical features and laboratory investigations. These inflammatory conditions are also responsible for secondary degenerative arthritis in old age.

2.5 KEY WORDS

- Osteoarthritis (OA)** : It is degenerative disease of synoial joints as a result of primary cartilage disorders.
- Osteomalacia** : It is disease of bone leading of softening of bone due to deficiency of Vitamin D and calcium.
- Pseudogout (Chondrocalcinosis)** : It is characterised by the deposition of calcium pyrophosphate dihydrate crystal in the joint cartilage and capsule.
- Rheumatoid arthritis (RA)** : It is characterised by chronic inflammation of synoial joints and is due to an auto-immune mechanism.

2.6 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

- 1) Osteoarthritis (Syn. Osteoarthrosis, OA) is a degenerative disease of the synovial joints commonly associated with minor inflammatory features due to primary cartilage disorder. It is by far the commonest form of arthritis in the elderly.

- 2) Primary (Idiopathic) OA is a disease of elderly people and develops gradually without having any known cause but certain risk factors like age, sex, heredity and excessive load on the joints (obesity, etc.) are attributed to it.

Secondary OA is always secondary to some underlying disease or trauma. Its onset is often seen in early or young age but can also occur in late middle or old age.

- 3) The common joints affected by primary OA are:

- Knee
- Lumbar spine
- Cervical spine
- Distal Interphalangeal joint of fingers
- Carpometacarpal joint of thumb
- Rarely hip

- 4) Main clinical features of OA are:

- Pain in joint
- Stiffness especially in the morning
- Limitation of movement
- Swelling

Check Your Progress 2

- 1) It is chronic inflammatory disease of joints and thought to be due to an autoimmune mechanism.
- 2) Common precipitating factors are: a) Stress, b) Endocrinal disturbances, c) Allergy Infections, and d) Environment.
- 3) Radiological features include soft tissue swelling and juxta articular osteoporosis in early stage and subsequently narrowing of joint space, erosion of subchondral bone and ankylosis.
- 4) Disease modifying agents (DMARDs) are D-pencillamine, gold salts, chloroquin and Methotrexate.
- 5) The common joints involved in rheumatoid arthritis are:
 - Small joints of hands e.g. Proximal inter-phalangeal joint (PIP) and metacarpophalangeal joints (MCP)
 - Wrist
 - Knees

Check Your Progress 3

- 1) Four common causes of secondary OA in the elderly are:
 - a) Old fractures
 - b) Rheumatoid Arthritis
 - c) Gout
 - d) Pseudogout (Chondrocalcinosis)
- 2) Gouty Arthritis:
 - Usually multiple smaller joints are involved (Polyarticular)

- Onset is sub-acute or chronic and less severe in intensity.
- Needle shaped negative birefringent crystals of sodium urate are seen in aspirated synovial fluid or tophaceous material under polarised light.

Pseudogout (Chondrocalcinosis):

- Usually simple large joint involvement eg. Knee rather than great toe, wrist, etc.
 - Usually symptom free. If symptoms appear they are intermittent and acute as episodes of acute synovitis.
- 3) Vitamin D deficiency is the common nutritional cause of osteomalacia.
 - 4) Radiolucent lines (Loozer's Zones or pseudofracture) are the characteristic feature of osteomalacia seen in ribs, pelvis, femoral neck and shaft.

2.7 FURTHER READINGS

Fauci, Braunwald, Isselbacher, *et. al. Harrison's "Principles of Internal Medicine"*, 14th edn., International edition – McGraw Hill Publishers, 1998.

John Crawford Adams, David L. Hamblen, *Outline of Orthopaedics*, 12th edn., 1995.