

METHODICAL INSTRUCTION OF PRACTICAL EMPLOYMENT ON A THEME: "SPECIFIC INFLAMMATORY DISEASES OF JOINTS (ARTHRITIS)"

Actually of theme: The inflammatory diseases of joints (arthritis) are widespread on earth. There is a tendency among the students and most of the clinicians to label all cases of polyarthralgia as rheumatoid arthritis. Though there is no dispute about the fact that the most common cause of polyarthritus is rheumatoid, yet not all cases of polyarthritus is rheumatoid. Difficult to diagnose and difficult to treat, it is indeed a problem which presents a nightmarish experience both to the doctor and the patient. After etiology they are divided into two groups: specific and unspecific. To specific arthritis belong to staphylococcal, streptococcus, brucellosis, tubercular, syphilitic, gonorrhoeal, dysenteric, septic and others arthritis. Non specific - rheumatic, rheumatoid, infectious-allergic and in.

General purpose: On the basis of pathogenesis, clinic, changes of inflammatory processes to master a testimony to application of orthopaedic methods of medical treatment in the complex therapy directed on saving of anatomic form of joints, and also renewal of their function, removal of discordantness contracture and their prophylaxis and social rehabilitation of patients.

The educational purposes

A=1 (The first level of mastering)

To know: classification of inflammatory diseases of joints. Etiopatogenesis of specific and non specific arthritis (RA in particular). To familiarize with a clinical and radiological features at arthritis and RA. To know about principles of modern diagnostics, treatment.

A=2 (The second level of mastering)

To know clinical and radiological features specific and non specific inflammatory diseases. Know theories of etiology and patogenesis, pathophysiology of inflammatory diseases. To know diagnostic criteria, accurate diagnostic laboratory investigations for arthritis. Clinico-roentgenologic- pathomorphological

classification of RA E. T. Scljarenko. To master methods of conservative treatment. To draw up a plan of medical treatment in dependence on a stage, activity of process and insufficiency of joints To define indications and ways of surgical treatment of these diseases. Complications.

A=3 (The third level of mastering)

To be able to carry out the differential diagnosis of specific and non specific inflammatory diseases joints. To be able to interpret roentgenograms in various stages inflammatory diseases of joints. To choose tactics treatment which depending on age patients, stages inflammatory diseases, degree of activity process. To know classes of drugs, mechanism of action of NSAIDa disease modifying antirheumatic drugs (DMARD.) Indications of second line drugs. Commonly prescribed drugs. Role of local corticosteroid treatment. Treatment of RA according to Scljarenko E.T. To define indications and principle of surgical procedures in rheumatology of disease in various age groups.

A=4 (The fourth level of mastering)

On the basis of a clinical material and use of sources of the basic and additional literature to know pathological change are observed in specific and non specific inflammatory diseases of joints and the severity varies according to the stages of the disease. To know substantiation of clinical signs, the radiographic or MRI features inflammatory diseases of joints. Differential diagnosis of arthritis. To know classes of drugs and mechanism of action. Practical prescribing of NSAIDs and DMARD. Third line drugs. Commonly prescribed drugs. To know treatment regimen, performing monitoring treatment in various age groups. Causes of early and long-term complications of diseases and treatment. To know the method of their prophylaxis and medical treatment. Principle of modern surgical procedures in rheumatology.

Interdisciplinary integration:

Subject (discipline)	To know	To be able
<p>1) Preliminary (normal anatomy, operative anatomy, topographical anatomy, histology, clinical biochemistry, pharmacology, patophysiology radiology, neurology).</p>	<p>Anatomical constitution of the hip, knee, ankle, shoulder, elbow, wrist joints Periods of normal development of joints. Structures of the joints, a place an attachment ligaments, their role. Muscles, their function and a role. Muscle forces acting across the joints. Anatomy-topographical features of region around joints. A substantiation rational operative procedures (access). Features of blood, nerves supply. Bacterial infection of the joint (the most” common offending organisms) The ways introduced bacteria into the joint. The most diagnostic tool for arthritis. Pathophysiology Systemic and intrasynovial immune response to the organisms (intra-articular antibody and bacterial reactive T cells). Elements for an immune-mediated synovitis. Three classes of drugs are used regularly. Mechanism of action. Commonly prescribed drugs.</p> <ul style="list-style-type: none"> • Analgesics • Anti-inflammatory drugs • Disease modifying drugs. <p>Third line drugs (methotrexate, hydroxychloroquine (Antimalarials) and sulfasalazine, leflunomide (Arava™ others Reparative regeneration of soft tissues around the joints.</p>	<p>To defined radiographic or features abnormal joints (signs of arthritis). Roentgenologic anatomy of the hip, knee, ankle, shoulder, elbow, wrist joints Joint aspirate. Steroids intra-articular injections. Identification of the causative organism in the primary center of an inflammation Results of laboratory investigations: parameters of blood, urine. Microscopy: the synovial fluid is tested for organisms, cells, sugars and proteins. Culture of the synovial fluid or of synovial tissue Infusion intravenously. Compression with ointments. Techniques self-management of the RA</p>
<p>The following (which provided)</p>	<p>Resort medical treatment (radons, sulphurated hydrogen shalfeynimi, scipidarnimi baths. Mechanism of action Preventive of possible complications of arthritis and ways of their prevention. Terms immobilization joints in various age groups of joints.</p>	<p>Immobilisation of the joints in functional position Muscle setting excercises To defined symptoms of specific and non specific inflammatory diseases of the joints. To know rules of application of POP casts</p>
<p>Intrasubject integration (themes of the given discipline with which it is integrated).</p>	<p>1) Indication and methods of conservative medical treatment, immobilization. 2) Indication and choice of methods surgical treatment</p>	<p>Orthopaedic deformities of arthritis. 1) To measure of active and passive motions in the joints. 2) To measure of the lengths of upper and lower limbs, cause of changes. 3) To carry out medical immobilization of joints. To know rules of application of rest, corrective, fixation splints in a good functional position.</p>

The plan and organizational structure of employment.

Basic stages of employment and their functions	Educational purposes in levels of mastering (memorizing)	Quality monitoring and training	Materials of methodical support (maintenance)	Hour, minute
1. Preparatory stage				
1. Organization of employment	The teaching and educational purposes of employment before group of students are established	Opening speech of the teacher	Methodical instruction	2-3
2. Definition of the educational purposes and motivation		The written control, express-questioning.		3-5
3. The control of an initial level of knowledge, skills			Test tasks	10
2. Basic stage				
Forming of professional abilities and skills. To seize knowledge of diagnostic algorithm of specific and non specific inflammatory diseases of joints To receive skill of conducting of orthopaedic inspection of patients with inflammatory diseases of joints Clinical: symptoms of arthritis. Laboratory investigations. To know indications and ways of conservative and operative treatment of these diseases, complication: a) To pay attention to the theories of etiology, pathophysiology of non specific inflammatory diseases of joints. To define change of tissues of joints at survey and palpation for E. T. Sclyarenko. b) To be able to measure relative and anatomic length of a segments c) To be able to interpret roentgenograms of the joints in infants, childhood and adolescents, adult. d) Formations of the diagnosis. e) Treatment: substantiation of methods of treatment, the indication and ways of surgical treatment, principles of rehabilitation.		Inspection of patients (infants, childhood and adolescents), theoretical interviews.	Thematical patients, reference cards.	30
		Studying of roentgenograms in an educational room.		Roentgenograms, tables, pictures, structural-logical charts, video materials.
		Discussion	Educational rooms, structural departments, clinics.	30
3. Final stage				
5. For examination on an investigated theme it is recommended to solve situational tasks		Thematic situational tasks, independent work, discussion. Individual analysis of control practical skills.	Educational room Educational room	20
6. Summarizing (theoretical, practical, organizational estimation)				Results of inspection reports, protocols, reference card for independent work with literature
7. Task home work				

1) Materials of the control over maintenance of a preparatory stage of employment

Questions, task, tests etc.

A=1

1. The region and structure of the joints.
2. Results of laboratory investigations.
3. Classes of drugs

A=2

1. Place an attachment ligaments, muscles their anatomic and functional role. Muscle forces acting on the joints. Normal development of the joints. Vascular anatomy.
2. Parameters of blood, urine. Microscopy: the synovial fluid is tested for organisms, cells, sugars and proteins. Culture of the synovial fluid or of synovial tissue.
3. Mechanism of action the drugs. Commonly prescribed drugs.

A=3

1. The joints in various age groups. Functional features structures around the joints. Features abnormal joints (signs of arthritis). Roentgenograms and MRI.
2. Laboratory investigations of blood, urine, synovial fluid, culture of material with primary center of lesion. Instrumental diagnostics of joints.
3. Practical prescribing of NSAIDs and DMARD. Third line drugs.

A=4

1. Anatomy-topographical features of region the joints.
2. To measure of active and passive motions in the hip joint, of the lengths of lower limbs. Instrumental diagnostics of joints.
3. Materials of maintenance of self-preparation of students.
4. Control questions. The written control (levels of mastering of a material).

A=1

Specific terms are used to better describe the conditions.

Etiology

Clinical inspection

Principle of treatment.

A=2

Theories of etiology, pathophysiology.

Clinical features of inflammatory diseases of joints.

Radiographic features of inflammatory diseases of joints.

Medical treatment of patients in various age groups. (conservative and operatively).

A=3

To carry out differential diagnostics specific and non specific inflammatory diseases of joints. To proved tactics of treatment patients in various age groups.

To carry out differential diagnostics RA with other

conditions, such as septic arthritis, traumatic hemarthrosis, non specific inflammatory diseases of joints.

To proved tactics of conservative treatment non specific inflammatory diseases of joints in depending on a stage, degree activity of process and insufficiency of joints. Indications to operative treatment, their principles.

Treatment regimen, performing monitoring treatment in various age groups.

A=4

Substantiation of clinical signs, the radiographic or MRI features inflammatory diseases of joints. Differential diagnosis of non specific arthritis. Techniques and methods of joint aspirate and steroids intra-articular injections and used corrective, fixation splints in position fixation for preventive of possible complications.

Preventive of possible complications and ways of their prevention. Radiology and ultrasonographic monitoring treatment, CT scan.

2) Materials of the control over maintenance basic stage of employment.

Roentgenograms

Thematical patients

Measuring tape

Skin marking pencil

Goniometer

3) Materials of the control over maintenance final stage of employment.

Knowledge of basis of clinical, laboratory, morphological and roentgenological signs of arthritis, differential diagnostics, prophylaxis, principles of medical treatment has the large practical value for medical and social rehabilitation of patients.

1. Classification of inflammatory diseases of joints.
2. Working classification of RA after E. T. Scljarenco and character of clinico-roentgenological, morphological changes in joints.
3. Etiopatogenesis of specific and non specific arthritis (RA in particular).
4. Clinical picture of specific arthritis and RA according to stages.
5. Differential diagnostics of arthritis and RA.
6. To be able clinically to inspect patients with RA (position abed, their motor vehicle, character of deformations (concordant, discordant), volume of motions in joints.
7. To know the features of roentgenologic changes at arthritis and RA.
8. To be able to form a clinical diagnosis.
9. To draw up a plan of medical treatment in dependence on a stage, activity of process and insufficiency of joints at RA.

Program of independent work of students to practical employment

Task 1. For verification of initial level of your knowledges give written answers (in a notebook) for such control questions:

1. The anatomic structure of joints, their physiology and biomechanics function
2. To light up aetiopathogenesis specific inflammatory diseases of joints.
3. What is known about aetiology and pathogenesis of rheumatoid arthritis?
4. Account for pathogenetic essence of medical treatment of specific and nonspecific illnesses of joints.
5. To understand I. What are «non specific inflammatory diseases of joint»?
6. To give determination of contracture joint, to name the types of contractures.
7. To give definition of ankylosis of joint, its kinds.

Task 2. On the basis of the trained literature from the theme of employment for self-control give written answers for such questions:

1. What necessity and testimony for introduction of complex therapy of inflammatory processes of joints of orthopaedic methods?
2. Testimonies and methods of orthopaedic medical treatment at the sharp chronic specific diseases of joints.
3. Classification of defeat of joints at rheumatoid arthritis and pathogenetic application of orthopaedic methods in dependence on the stage of pathological process in a joint.
4. Mechanism of formation of contracture at the specific diseases of joints and rheumatoid arthritis, classification of contractures.
5. Clinical and roentgenologic differential diagnostics of ankylosis.
6. What types of orthopaedic medical treatment are used as medical treatment of specific inflammatory diseases of joints and RA?
7. Principal and tactic of medical treatment of patients with the specific inflammatory diseases of joints and at RA?
8. Pathogenetic peculiarities of specific inflammatory diseases of joints and RA.
9. Laboratory diagnostics of inflammatory specific diseases of joints and RA.
10. Social rehabilitation of patients with the specific inflammatory diseases of joints and RA.

Task 3. Investigation.

By the I. To master the methods of clinical and roentgenological inspection of patients with the specific and non-specific inflammatory diseases of joints.

2. To be able to conduct differential diagnostics inflammatory specific and non specific diseases of joints and substantiation of diagnosis.

3. Considering the age, stage of disease, to work out a plan and appoint complex pathogenetic therapy, its character and volume.

Execution sequence :

During collection of anamnesis to pay attention to the character of beginning of disease, remoteness, seasonal variation, remissions and exacerbation, previous use of medications, their efficiency (especially corticosteroids preparations).

Review: position of patient on the bed, steps, self-service, character of deformations of joints (Thomas test), the state of skin covers, hypotrophy of muscles, neurotrophic violation. Range of movements of the spine (Schober's test). Physical examination of sacroiliac joints (Squish test, Iliac compression test, Gaenselen's test)

Palpation: determination of temperature of skin, presence of liquid in joints (Patellar tap test-ballotment of patella, fluid displacement test, fluctuation test), synovial membrane thickening, bursal enlargement, character of capsule of joint, pain points, neurological tests.

Measuring of relative, anatomic and functional lengths of lower extremities, anatomic to the landmark and determination of volume of motions in joints and correlation of them with normal parameters.

Interpretation of roentgenograms, MRI, sonograms.

Differential diagnostics and guess (tentative), provisional, final diagnosis.

Planning of medical treatment.

Show the clinical and rentgenological data, diagnosis, method of medical treatment to the teacher and participation in the discussion of theme of practical work in a group.

Task 4. For verification of capturing you material from a theme decide such situation tasks:

The contents of employment.

Specific arthritis

- staphylococcal,
- streptococcus,
- brucellosis,
- tubercular,
- syphilitic,
- gonorrhoeal,
- dysenteric, septic and others

Piogenic infection of joint or septic arthritis

DEFINITION

Septic arthritis (bacterial arthritis) is defined as a bacterial infection of the joint which causes an intense inflammatory reaction with migration of polymorphonuclear leucocytes and subsequent release of proteolytic enzymes.

Causative organisms The most common offending organisms are: *Staphylococcus aureus* (50%), *Streptococcus* (20%), *Pneumococcus* (10%), *E. coli*, *Aerobic gram-negative rods* (20-25%), *Polymicrobial (mix) infections* (5-10%), *anaerobic organisms* (5% of cases) etc

Staphylococcus aureus is the most common cause of the vast majority of cases of acute bacterial arthritis in adults and in children older than 2 years.

Predisposing factors: The following act as predisposing factors: trauma, diabetes, steroid therapy, malignancy, etc. Bacteria can get into a joint in many ways.

The bacteria may be introduced into the joint as a result of injury, such as a laceration that goes into the joint. Surgery on the joint can introduce bacteria into the joint. Intraoperative contamination (60-80% of cases), or of bacteremias (20-40% of cases). There is always a small chance of causing an infection if a needle is placed in the joint to either remove synovial fluid for testing or to inject medications into the joint. The joint infection can also come from infections in the skin around the joint or infections in the bones around the joint. The bacteria can also be carried by the blood from an area of infection somewhere else in the body. The latter type may be spontaneous (ie, gingival disease) or secondary to various manipulations. Once in the joint, synovial fluid provides a good place for the infection to lodge and grow.

Once purulence has developed and a bulging effusion is noted, diagnosis is made easily. Typically, the patient presents with fever and a joint that is hot, red, painful, distended, and has a markedly decreased range of motion. Restriction of movement occurs to active and passive attempts.

Pathology: The major consequence of bacterial invasion is damage to articular cartilage. This may be due to the particular organism's pathological properties, such as the chondrocyte proteases of *S aureus*, as well as to the host's polymorphonuclear leukocytes response. The cells stimulate synthesis of cytokines and other inflammatory products, resulting in the hydrolysis of essential collagen and proteoglycans.

Clinical: Once purulence has developed and a bulging effusion is noted, diagnosis is made easily. Typically, the patient presents with fever and a joint that is hot, red, painful, distended, and has a markedly decreased range of motion. Restriction of movement occurs to active and passive attempts.



Lab Studies:

Joint aspirate and synovial fluid analysis

This is the most accurate diagnostic tool for septic arthritis.

1/ Microscopy: the synovial fluid is tested for organisms, cells, sugars and proteins.

2/ Culture of the synovial fluid or of synovial tissue – is the only definitive method of diagnosing

Biopsy of the synovium (examining histologically)

Laboratory investigations WBCs (polymorphs) are raised (80% of cases), ESR (Erythrocyte sedimentation rate) increased more than 20 mm/hr in (50% of cases), Hb percentages decreases.

Blood culture is positive in 35 to 50% of the cases.



Treatment

1. The joint is aspirated first (2-3 times a day during the first few days), if pus is present, arthroscopic debridment and drainage, open arthrotomy, debridment and joint drainage is indicated.
2. Antibiotics (chosen) are used for a minimum period of 2 to 4 weeks – parenterally . With this in mind, most patients respond to IV oxacillin or nafcillin in combination with IV ceftriaxone, cefotaxime, or ceftizoxime.
3. *Immobilisation* of the joints

Radical treatment is reserved for all except which do not respond after 5-7 days to aspiration, antibiotics and immobilisation.

The duration of treatment varies depending on organism and patient response to medical and surgical drainage.

If cartilage is destroyed, aim for ankylosis in functional position (arthrodesis)

Complications

1. Joint destruction.
2. Pathological dislocation.
3. Osteoarthritis in later years.
4. Ankylosis—fibrous or bony.
5. Acute osteomyelitis.
6. Amyloidosis very rarely develops.
7. Septicaemia, pyaemia, etc.

Gonococcal arthritis

Neisseria gonorrhoeae remains the most frequent pathogen (75% of cases) among younger sexually active individuals

The triad of

- 1) dermatitis, tenosynovitis, and arthritis (40%).
- 2) dermatitis, tenosynovitis, and migratory polyarthritis (60%) – this disseminated infection.

Lab Studies:

Culture of the organism from the synovial fluid (positive in more than 80% of cases)

- 90% positive in cervical samples,
- 50-75% in male urethral samples,
- 20% positive in pharyngeal samples,
- 15% positive with rectal culture

Treatment

- 1) effusions should be aspirated (repeatedly)
- 2) third-generation cephalosporin: ceftriaxone 1 g q12h, ceftizoxime 1 g q8h, or cefotaxime 1 g q8h. for at least 1 week.

allergic patients – include ciprofloxacin (400 mg IV q12h), ofloxacin (400 mg IV q12h), levofloxacin (250 mg/d IV) or spectinomycin (2 g IM q12h).

30-50% of patients are co-infected with Chlamydia, test all patients and treated with azithromycin (1 g PO as a single dose) or doxycycline (100 mg PO bid for 7 d).

Unspecific arthritis

- Reactive arthritis
- Infectious-allergic
- Rheumatic
- Rheumatoid arthritis
- Seronegative spondylarthritis

Diffuse systemic

- Systemic lupus erythematosus (SLE)
- Polymyositis
- Scleroderma
- Syndrom Shegrena

Reactive arthritis

Reactive arthritis, a sterile inflammatory process, may be the consequence of an infectious process located elsewhere in the body

Reactive arthritis can be caused:

- Genitourinary infections (urinogenital arthritis) – Chlamydia trachomatis, mycoplasma, ureaplasma, the L-form of microbes, viruses.
- Gastrointestinal infections (Shigella, Salmonella, Yersinia, Clostridia, Campylobacter species and other microorganisms)
- Nasopharyngeal infection (hemolytic streptococcus groups A, C, G)
- Postvaccinal arthritises

Usually develops 2-4 weeks after genitourinary or gastrointestinal infection.

About 10% of patients do not have a preceding

symptomatic infection.

Young usually less than 40 years

Predominantly male

Usually asymmetrical oligoarticular

While low back pain may be present in 50% of patients, most patients with acute disease have minimal findings on physical examination.

Pathophysiology

- HLA-B27 histocompatibility antigens is positive in 65-96% of patients (75% on average)-genetic factors appear to play an important role.
- Synovial fluid cultures are negative for enteric organisms or Chlamydia species

Molecular evidence of bacterial DNA (by polymerase chain reaction [PCR]) in synovial fluids has been found bacterial antigen – serologic techniques for the detection of Chlamydia species

- Systemic and intrasynovial immune response to the organisms has been found with intra-articular antibody and bacterial reactive T cells.
- Elements for an immune-mediated synovitis are present.
- the absence of the rheumatoid factor.

HLA-B₂₇ is a marker for immune response gene that determines susceptibility to an environmental trigger. HLA-B₂₇ may act as a receptor site for an infective-agent. It may induce tolerance to foreign antigen with which it cross-reacts.

CLINICAL

Sex-affects – male-to-female ratio of 9:1.

Age Most patients are aged 20-40 years.

An asymmetrical predominately lower extremity oligoarthritis is the major presenting symptom.

Low back pain occurs in 50% of patients.

Heel pain is common because of enthesopathies at the Achilles or plantar aponeurosis insertion on the calcaneus and ischial tuberosities – i.e pain at the site of insertion of ligaments and tendons.

The complete Reiter triad of urethritis, conjunctivitis, and arthritis may occur. Genitourinary disturbances such as *dysuria and urethral discharge*.



Fig. Lesions secondary to enthesitis including erosions (insertion of the Achilles tendon on the calcaneus) and periosteal new bone formation (insertion of the plantar fascia on the calcaneus)



Reiter's Syndrome

Diffuse swelling of fingers and toes may occur due to small joint synovitis and tenosynovitis. The manifestation is referred to as *sausage digit*.

Lab Studies:

1. **Synovial fluid analysis** reveals a high white blood cell count, most often with elevated polymorphonuclear leukocytes acutely.

Gram stain and culture results are negative.

Microbial components and antigens have been identified in joint fluid using sophisticated laboratory techniques.

2. **Identification of the causative organism in the primary center of an inflammation**

- urogenital tract cultures
- throat
- blood
- stool
- studying of a deposit of urine

3. **Definition serumal AB (anti-body):** to *Chlamydia trachomatis*, *Shigella*, *Salmonella*, etc antistreptolysin -O, antinuclear AB.

4. **Other parameters of blood:** erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP), number of leukocytes and the formula, an antigen of a virus of a hepatitis B, level of a uric acid.

Acute phase reactants, including erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP), are usually elevated markedly but later return to the reference range with subsidence of the inflammation.

Treatment

Nonsteroidal anti-inflammatory drugs (NSAIDs)

Corticosteroids- intra-articular injection

Antibiotics – indicate infectious agent?

3-month course of Tetracycline (Lymecycline)

reduces the duration of illness

In patients with chronic symptoms or with persistent inflammation

Second-line drugs

Disease-modifying antirheumatic drugs (DMARDs)

- sulfasalazine
- methotrexate or other immunosuppressive agents.

Rheumatic Diseases

We are all familiar with the saying regarding Rheumatism – Rheumatic fever (arthritis), “It licks the joint but bites the heart/” contrarily it can be said of Rheumatoid arthritis, “It bites the joints, licks all other systems of the body and barks at the treating physicians!”

The rheumatic diseases embrace an amazing array of hereditary and acquired disorders with a wide variety of clinical features.

RHEUMATOID ARTHRITIS

DEFINITION

It is **autoimmune systemic disease of connective tissue** in young and middle-aged adults characterised by chronic progression of proliferative and destructive changes in joints: synovial membrane, periarticular structures, skeletal muscles and perineural sheaths. Eventually joints are destroyed, fibrosed or ankylosed, development of permanent deformations of joints, violation of their function. *It is a widespread vasculitis of the small arterioles.*

The hallmarks of rheumatoid arthritis are symmetrical joint involvement, marginal erosions, uniform joint space narrowing, juxta-articular osteoporosis, and soft tissue swelling. Incidence is 3%.

Sex Eighty % affected are women;

Male: Female ratio is 1:3

Age No age is exempt, mean age is 40 years.

Aetiology

The exact cause is unknown but malfunction of the cellular and humoral arms of the immune system are cited as the probable cause.

Current hypothesis An initiating antigen triggers an aberrant response, which becomes self-perpetuating long after the offending antigen has been cleared.

Antigenic agents Which probably act as predisposing factors are viruses: rubella, Epstein-Barr, etc. genetic (common in people with HLA DR₄ – 60%), psychological stress, allergic factors, endocrine factors and metabolic factors.

Pathogenic spectrum (Fig.)

Synovitis

Synovitis + Vasculitis + Panus (Granuloma)

Against unknown exciting antigenic agents rheumatoid factors are elaborated. Rheumatoid factors (RFs) are synthesised in rheumatoid synovial tissue (while B lymphocytes) and are mainly IgM (autoantibodies) in 70 to 90% of cases. In the remainder 10 to 30% it could be IgG, IgA or IgE. This rheumatoid factor along with IgG triggers (autoantigen) off a compliment cascade. The WBCs engulf this immune com-

plex and elaborate lysosomes. Neutrophils release procollagenase which is converted into an active collagenase by the synovial fluid. This splits the collagen of the articular cartilage. The neutral proteases complete the degradation of the collagen fibrils.

Pathogenesis phases

1. Initialization
2. Mediatorous
3. Lymphoid
4. Aggressive
5. Destructive

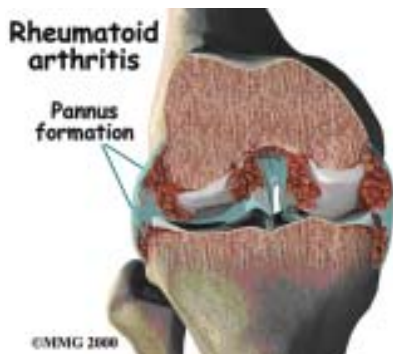
Pathology

As explained earlier due to the synthesis of auto-antibodies, against unknown antigenic agents in the synovium, primary synovitis sets in. This primary synovitis gives rise to pannus, which in turn forms the villus. This villus migrates towards the joint causing its destruction and ankylosis, fibrous in the early stages followed by bony ankylosis in the late stages.

The synovial membranes of these joints exhibit neovascularization and increased adhesion factors. As the destructive process continues, pannus formation begins and cartilage erosion occurs at the lateral margins of the joint.

Microscopy

It reveals rheumatoid units which is an area of fibrinoid necrosis surrounded by fibroblasts arranged radially and it is surrounded by a fibrous capsule. This rheumatoid unit is found in the muscle, vessels, nerves, synovium, etc. Vasculitis is widespread, and commonly affects the arterioles. Muscles show nodular polymyositis. Subcutaneous nodules are made up of central necrotic area, palisade formation by mononuclear cells, round cell infiltration and fibrous capsule. Lymph nodes show hyperplasia. Nerves show perineural necrosis or fibrosis and heart rarely shows changes unlike in rheumatic fever.



Recent diagnostic criteria for rheumatoid arthritis According to American college of rheumatology in 1987 revised criteria at least 4 out of 7 criteria should be fulfilled to make a diagnosis of rheumatoid arthritis.

- Morning stiffness.
- Arthritis or swelling of 3 or more joints for > 6 weeks.
- Arthritis or swelling of hand joints (wrist metacarpal) for more than 6 weeks.
- Symmetrical swelling (arthritis of same joint areas) more than 6 weeks.
- Serum rheumatoid factor present.
- Radiographic features of RA.
- Rheumatoid nodules.

Clinical Features in Rheumatoid Arthritis

Rheumatoid arthritis usually presents in three forms:

Classical presentation

In this group patient is usually a woman in her mid 30s. Pain, swelling, stiffness of the small joints of hands and feet are the common presenting complaints.



Patient also gives history of weight loss, lethargy and depression. Joint swelling could be symmetrical and the patient presents with deformities of bones and joints in the late stages. *The patient*



Fig. Before and after

gives history of remissions and exacerbation of symptoms with seasonal variations. This is a very classical complaint in the absence of which diagnosis of rheumatoid arthritis should be carefully made. Symptoms fluctuate from day to day.



Other presentations This consists of palindromic presentation involving one or two joints, systemic presentation—usually seen in middle-aged men

presenting with pleurisy, pericarditis, etc. It mimicks malignancy. It may present as polymyalgia particularly in elderly patients. It may present as monoarthritic swelling. Some times the presentation may be very explosive unlike the usual chronic presentation.

Extra-articular features Two or more features are present in 75% of the cases. Rheumatoid factor is invariably present and indicates a bad prognosis.

1. Subcutaneous nodules are present in 25% of the cases. It is seen over the elbow, sacrum and occiput. Nodules may also be present in lungs, eye, hearts, etc. When present over flexor tendon it may cause trigger finger.
2. Widespread vasculitis.
3. Blood abnormalities commonly encountered in rheumatoid arthritis are chronic anaemia, iron deficiency anaemia, vitamin B₁₂ and folate deficiency, leucocytopenia, thrombocytosis and marrow hypoplasia.

4. Osteoporosis could be generalised or localised in bones around the joints.



5. Eye changes seen in rheumatoid arthritis are keratoconjunctivitis sicca or Sjogrens syndrome, episcleritis (common), scleritis (serious problem), secondary glaucoma and scleromalacia perforans.



keratoconjunctivitis sicca is a persistent dryness of the cornea and conjunctiva, episcleritis

6. Lung affections in rheumatoid arthritis are pleurisy, pleural effusion, Caplan's syndrome (RA + pneumoconiosis involving the upper lobes) and fibrosing alveolitis in 2 per cent.
7. Heart affections in rheumatoid arthritis are pericardial friction (10%), pericardial effusion (30%), arrhythmias and heart block.
8. Neuromuscular system involvement includes carpal tunnel syndrome, mononeuritis multiplex, muscle wasting, subluxation of C₁ and C₂, etc.
9. Reticuloendothelial system affections include splenomegaly (5%), Felty's syndrome in 1% (RA+ splenomegaly + Neutropenia), generalised lymphadenopathy and painless pitting oedema of the feet and ankles.



Rheumatoid nodules



Rheumatoid vasculitis



Rheumatoid neutrophilic dermatitis

ORTHOPAEDIC DEFORMITIES IN RHEUMATOID ARTHRITIS

Rheumatoid arthritis can affect any joint in the body. It involves the peripheral joints more often and very rarely affects the larger joints. Of particular importance are the affection of the temporomandibular joint and atlantoaxial joint which can prove lethal due to the cord compression.

Quick facts

Joints involved in rheumatoid arthritis

- Metacarpophalangeal and interphalangeal joints of the hand.
- Shoulder elbow and wrists.
- Hip, knee and ankle.

Others: Tempromandibular joint, atlantoaxial joints and facet joints of the cervical spine

Orthopaedic deformities of the hand (rheumatoid hand)

The following are some of the very common deformities seen in the hand (Figs).

- a. *Symmetrical peripheral joint swelling* of metacarpophalangeal and interphalangeal joints (Fig.).
- b. *Ulnar deviation* of the hand is due to rupture of the collateral ligaments at the metacarpophalangeal joints which enables the extensor tendons to slip from their grooves towards the ulnar side .
- c. *Boutonniere's deformity* is due to the rupture of central extensor expansion of the fingers resulting in flexion at the PIP joint.
- d. *Swan neck deformity* is due to the rupture of the volar plate of the PIP joints which enables the tendons to slip towards the dorsal side . This is also known as *intrinsic plus deformity*. Here there is hyperextension of the PIP joint and flexion of the DIP joints.
- e. *Trigger fingers and trigger thumb* are due to nodules over the tendons.

Rheumatoid foot It affects the forefoot, midfoot and hindfoot. In the forefoot patient may develop hallux valgus deformity of the great toe, claw toes, callosity over the dorsum and the sole, widening of the forefoot etc. The heel may show valgus deformity.



Other joints. In the knee initially there is a gross soft tissue swelling due to synovitis and in the later stages, the patient may develop fibrous ankylosis or bony ankylosis due to widespread destruction of the articular cartilage by the pannus. Similarly other major joints of the body like the hip, ankle, shoulder, elbow could be involved.



Fig. A large bunion with deformity of the big toe is associated with deformities of all of the toes. This is a typical appearance of rheumatoid arthritis.

Investigation

Laboratory Hb percentage is low and shows normochromic, hypochromic anaemia. WBCs are decreased or normal, there is increased lymphocytes and the ESR is raised.

Serological tests

Basis Rheumatoid patient's serum contains RA factor which in the presence of γ -globulin agglutinates certain strains of streptococci sensitised by sheep cells and latex particles.

a. **Latex fixation test** Unknown serum + γ -globulin latex suspension

Agglutination

+when serum has abundant RAF.

If -ve, do more sensitive test as there is less rheumatoid arthritis factor in the serum

b. **Inhibition test** This test uses the characteristics of euglobulin from unknown serum. Euglobulin from normal serum neutralises the rheumatoid factor thereby inhibiting agglutination. Euglobulin from rheumatoid serum have no effect on the rheumatoid factor and agglutination occurs. *This is the most sensitive test.* Positive even when rheumatoid arthritis factor is present in minute amounts.

Remember

RA factor is found in:

- 75 % of rheumatoid arthritis cases
- 10 % in healthy elderly people
- 10 % in malaria, etc.

Radiological Features of Rheumatoid arthritis

- Soft tissue swelling.
- Juxta-articular osteoporosis.
- Erosion of joint margins.
- Joint spaces are decreased.
- Deformities.
- Atlantoaxial subluxation.
- Subchondral erosions and cyst formation.
- Fibrous and bony ankylosis develop in the late stages (Figs).



Fig. : Radiological features of rheumatoid arthritis

- Joint narrowing
- Soft-tissue mass
- Bone erosion

Other common abnormalities These include increased C reactive protein (CRP), increased alkaline phosphatase, increased platelets, and decreased serum albumin.

Synovial fluid analysis This is not performed routinely for diagnostic purposes but performed to exclude other causes of inflammation such as infection. Synovial fluid in RA is typically yellow, watery and turbid due to high WBC and has a low sugar content.

Clinical, roentgenological, pathomorphological classification of RA

E. T. Scljarenko, I. A. Stetsoula) :

I stages of sinovitis (acute, subacute, chronic);

II stage – the productive-destructive panarthrititis, which has three phases:

- a) exudative-proliferative;
- b) proliferative-destructive;
- c) destructive-sclerotic.

III stage – ankylosing (fibrotic, bone).

I stage: deformation of joint due to sinovitis, pain, especially in movement, positive symptom of ballot of patella, reflex half-bent position of joints with violation of physiology equilibrium of muscles (extensors, adductors, flexors, abductors – in brief, hypotrophy of extensors) hypoxia due to the compression of vascular network, vasculitis – all these very quickly leads to muscular contracture in default of structural changes in a joint.

Sinovitis depending on activity of inflammation an inflammatory liquid accumulates in the cavity of joint. In flexion joints as this is the position of ease and of maximum joint capacity

The first phase of the II stage: disfiguration and pain diminishes, on skin visible wrinkles, the symptom of ballot is positive, forced position. The Sinovial synovial tissue inflammatory, begins to overgrow granulation tissue (beginning of formation of pannus). In the places of wrinkling of capsule of synovial membrane accretes with a fibrous capsule.

The second phase of the II stage: the volume of joint diminishes considerably, tension of skin disappears almost, the symptom of ballot is absent. It is felt at palpation of bulge of capsule and in a synovial cavity felt doughy tension. Expressed hypotrophy of extensors.

The Sinovial sheet is covered by granulation excrescences which fill the cavity of joint Pannus grows into hyaline cartilage and destroys it. At deleting of pannus on a cartilage remain a different size and depth defects, extraarticular, intracapsular joints.

The third phase of the II stage: hypotrophy of muscles progresses. Especially extensors, contractures, adductors and dislocation of joints. A skin is less tensed. At palpation there is the considerable bulge of capsule of joint, in the cavity felt doughy consistency. At opening of joint cavity is filled with granulation tissue, adhesions to the joint surfaces, dystrophied. A capsule is considerably thickened due to the granular-cicatric regeneration.

The III stage – a joint is deformed, a skin above it is atrophic, temperature is not changed. At opening of joint a capsule is accrete by joint ends, between them a crack is filled with massive cicatric tissue (fibrous ankylosis) or bone tissue (bone ankylosis).

Differential Diagnosis of Rheumatoid Arthritis

Early disease

- Common
- Viral arthropathy
- Polymyalgia
- * Infection
- Prodrome of hepatitis
- Hypoparathyroidism

Rare

- Sarcoidosis
- Acute leukaemia
- Coeliac disease
- Eosinophilic Fascitis

Established disease

- Psoriatic arthritis
- Erosive osteoarthritis
- Chronic pyrophosphate disease
- Chronic tophaceous gout
- SLE
- Rater's syndrome
- Ankylosing spondylitis

Rare

- Amyloid arthropathy
- Multicentric reticulohistiocytosis

Quick facts of rheumatoid arthritis

- Most common chronic inflammatory disorder.
- 80 per cent in women.
- Exact cause is not known.
- Rheumatoid unit is present.
- History of remissions and exacerbations present.
- Symmetrical peripheral joint involvement.
- Rheumatoid arthritis factor is +ve in 70%.
- Inhibition test is roost sensitive.
- Extra-articular features are seen in 75%.

Management (Fig.)

Aims of treatment

1. To keep inflammatory process at a minimum, thereby, preserving joint motion, maintaining healthy muscles and preventing secondary joint stiffness and deformity.
2. To keep constitutional symptoms at a minimum.
3. The possible deformities are anticipated and prevented by appropriate splinting.
4. Finally surgical measures to correct the deformities, eliminate pain and provide stability are undertaken.

General measure

It aims at improving the general condition of the patient and to keep the joints properly splinted in functional position to guard against the ensuing ankylosis.

Removal of infective foci.

Splinting in the functional position helps in the event that ankylosis ensues. The splint is removed daily. Hot packs are given or patient is placed in Hubbard tank at (92.6-102°F) and the joints are put into full range of motion.

While the joints are immobilised, muscle setting exercises are advocated. After removal of the splints, resistance exercises are begun.

Splints These are known to serve three main functions:

- Rest and relief of pain (*rest splints*).
- Prevention and correction of deformity (*corrective splints*).
- Fixation of damaged joint in a good functional position (*fixation splints*).

Drug Therapy

Three classes of drugs are used regularly.

- Analgesics
- Anti-inflammatory drugs
- Disease modifying drugs.

Steroids especially intra-articular injections have an important role.

No treatment is ideal and it is important to assess the patient's response so that the most effective regimen is adopted. Commonly used methods of assessment include; duration of early morning stiffness, number of tender, swollen joints. Functional assessment questionnaires, ESR, radiographs, etc.

First Line of Drugs: NSAIDs

These are aspirin/ibuprofen/ketoprofen/diclofenac sodium naproxen/piroxicam, etc.

They are the major pharmaceutical agents for pain relief in rheumatic diseases. About 20 per cent of patients admitted to the hospital, are taking NSAIDs. Though useful, they have significant side effects.

Aspirin is the *drug of first choice* but because of its undesirable side effects, other NSAIDs are chosen. But since the latter are more expensive, aspirin still remains the first choice drug.

Mechanism of action of NSAIDs They have an inhibitory action on the following pain mediating agents.

- Prostaglandin synthesis
- Leucotriene synthesis
- Lymphocyte activation
- Oxygen radical generation
- Cytokine production, etc.

Practical prescribing of NSAIDs There is no ideal NSAID. It is important to become familiar with a few of these drugs and to find the most appropriate NSAID for one particular patient. *If possible NSAIDs should be prescribed twice daily regimen, with a flexible dose to cover the main period of pain.* Initially, clinicians should prescribe NSAIDs with which they are familiar and not necessarily the latest drug.

Only one NSAID should be prescribed at one time and if the patient has not responded to an adequate dose within 2 to 3 weeks, an alternative NSAID should be given.

It is important to justify the use of NSAID, both in the short- and long-term. Other methods of pain relief should always be considered, such as exercises, heat and cold hydrotherapy.

Quick facts of NSAIDs

- Drugs of first choice
- Aspirin still remains as the first choice
- There is no ideal NSAIDs
- Prescribe NSAID with which clinician is familiar
- Ideal is twice daily regimen
- Only one NSAID at a time
- To be tried for a minimum of 2 to 3 weeks
- NSAIDs provide only symptomatic relief

NSAIDs provide only symptomatic relief. Most patients require daily treatment. These drugs probably do not have any influence on the disease process and may therefore be regarded as a background therapy with a variable daily dose according to symptoms.

Second Line of Drugs

Second line drugs are alternatively known as *disease modifying antirheumatic drugs (DMARD)* and are slow acting drugs. It would seem that they have influence on the underlying disease process, and may take several weeks or months to exert this effect.

To get maximum benefit second line drug therapy should be continued for *at least 6 months* and in order to sustain the benefit, it needs to be continued indefinitely. They are all toxic.

When second line therapy is introduced *symptomatic NSAIDs need to be continued in parallel.* If the response to the second line drug is good, the dose of NSAID can be reduced.

Commonly prescribed drugs include

- Injectable gold and oral gold, (sodium aurothiomalate).
- Penicillamine
- Sulphasalazine
- Antimalarial drugs (e.g. chloroquine)
- Dapsone and levamisole.

The choice of the drug to be given first will depend on the experience of the prescriber and on the facilities available for monitoring. There is little evidence to suggest which drug should be prescribed first.

If after 6 months of adequate therapy, no response has been observed, an alternative drug may be tried.

At the end of a year of the treatment, 65 per cent would have improved, 35 per cent will have had to stop therapy because of toxicity or lack of therapeutic effect.

Antimalarial drugs They do not require intensive blood monitoring and if these facilities are limited, chloroquine or hydroxy chloroquine can be particularly used.

Other agents known to have second line drug effect include levamisole and dapsone. Levamisole is not freely available in some countries and its toxicity seems to be greater than that of gold and penicillamine. Dapsone has a high toxicity.

Indications of second line drugs *The ideal patient for a second line drug is one who has active synovitis with generalised inflammation in many joints, who is taking the recommended dose of a NSAID which is not producing relief of symptoms.*

Quick facts of second line drugs

- Used only if first line fails.
- Known as DMARD.
- To be continued for at least 6 months.
- Parallel NSAID is to be used.
- Choice of drugs is based on clinician's experience.
- Antimalarial drugs are used if proper blood monitoring is not available.
- All drugs are toxic.

Third Line Drugs

Azathioprim, cyclophosphamide and chlorambucil can exert a second line effect in patients with rheumatoid arthritis. However these drugs are considered under third line drugs because in addition to the toxicity which may arise acutely during their use, *there is also anxiety about late toxicity.* This late toxicity

which may occur after prolonged therapy is an additional hazard for patients who are suffering from what is essentially a non-fatal condition. These drugs have therefore to be treated with respect though in selected cases they may be of benefit.

Commonly prescribed drugs include

- methotrexate
- hydroxychloroquine (Antimalarials) and sulfasalazine
- leflunomide (Arava™)
- tumor necrosis factor inhibitors
- soluble interleukin-1 (IL-1) receptor therapy
- intramuscular gold
- cytotoxic agents (azathioprine, cyclophosphamide, and cyclosporine A)

Role of local corticosteroid treatment is considered when the rheumatoid arthritis affects one or two joints. It is also indicated in tendinitis, capsular or ligament involvement, carpal tunnel and compression syndromes. It is given weekly in acute cases and three monthly in chronic. // *two injections are ineffective the treatment is discontinued.*

methotrexate (*immunosuppressive and cytotoxic effects*)

hydroxychloroquine (Plaquenil)- (*Antimalarials*) no longer recommended because of its greater ocular toxicity.

Sulfasalazine *Its mechanism of action in RA is unknown.*

leflunomide (Arava™) *The mechanism of action of leflunomide is not fully understood but may be related to its ability to inhibit tyrosine kinase activity and inhibit de novo pyrimidine biosynthesis through the inhibition of the enzyme dihydroorotate dehydrogenase.*

Tumor necrosis factor alpha (TNF- α) *is a pro-inflammatory cytokine produced by macrophages and lymphocytes. It is found in large quantities in the rheumatoid joint and is produced locally in the joint by synovial macrophages and lymphocytes infiltrating the joint synovium. The pro-inflammatory effects of TNF- α suggests that inhibition of TNF- α would be clinically useful in rheumatoid arthritis.*

Anti-TNF therapy.

There are currently three TNF inhibitors FDA approved in the treatment of RA; etanercept (Enbrel™), infliximab (Remicade™), and adalimumab (Humira™).

Mechanism: Etanercept binds TNF- α in the circulation and in the joint, preventing interaction with cell surface TNF- α receptors thereby reducing TNF activity.

Etanercept (Enbrel™) Etanercept is a human fusion protein that combines two extracellular binding domains of the p75 form of the TNF receptor to the Fc portion of a human IgG1 antibody molecule. The protein is entirely human and anti-etanercept antibodies are relatively uncommon.

Soluble Interleukin-1 (IL-1) Receptor Therapy anakinra (Kineret™),

IL-1 is a cytokine that has immune and pro-inflammatory actions and has the ability to regulate its own expression by autoinduction. Evidence supports the fact that the level of disease activity in RA, and progression of joint destruction, correlate with plasma and synovial fluid levels of IL-1. IL-1ra is an endogenous receptor antagonist. Evidence supporting the anti-inflammatory role of IL-1ra in vivo is demonstrated by the observation that IL-1ra deficient mice spontaneously develop autoimmune diseases similar to rheumatoid arthritis and arteritis. Hence, IL-1ra is a rational therapeutic target for use in the treatment of RA.

Intramuscular Gold (Myochrysin, Solganal)

They are rarely used now due to side effects and very slow onset of action. An oral gold compound (Auranofin) is also available but its efficacy is limited.

Cytotoxic Agents immunosuppressive agent

The most commonly used cytotoxic drugs are azathioprine (Imuran), cyclophosphamide (Cytoxan) and cyclosporin A.

Treatment according to Scljarenko E.T.

Intravenously in drops infuse : contrykal (10-20 thousand) + heparin (7-10 thousand units) + 400,0 neohemodes (rheopolyglukin).

At the end of infusion intravenously slowly infuse 10,0 10% solution calcium chloride.

Gives about 3-5 at the interval of 5-7 days (As an anti-inflammatory, desintoxication, improvement of reactive and microcirculatory beds to excrete autoimmune complexes, to inhibit autoimmune processes and to decrease permeability of connective tissue membranes)

Night Compression is a compress with a 30-50% solution of dimexide.

Preliminary to smear the surface of joint in even correlations by heparin, hydrocortizone ointments.

G.Sanatorium medical treatment. In 0 and 1st stage of activeness, in clinical and laboratory remission it is not a contra-indication for resort medical treatment (radons, sulphurated hydrogen shalfeynimi, scipidarnimi baths)

Surgical procedures in rheumatology

Aim of surgery in rheumatoid arthritis is to:

- Relieve pain.
- Correct the deformity of the joints.
- Reduce joint instability.
- Improve the range of movements of the joints.

Surgical advice should be sought only when the disease is *clearly progressive and conservative measures are failing*, but before the patient starts to lose a significant amount of bone stock. If surgery is delayed, more bone is lost, the soft tissue deteriorates and the deformity increases.

Preoperative considerations Before surgery for rheumatoid disease, a number of specific points should

be checked. Related conditions such as diabetes, hypertension and anaemia should be adequately treated and

- Steroid dosage should be reduced.
- There should be no active infection.
- A radiograph of the cervical spine should be obtained to exclude instability.

Surgical Methods

Synovectomy It may be indicated in patients with rheumatoid arthritis if joint destruction is minimal and if the main cause of pain and swelling is synovitis, which is resistant to medication and physiotherapy. Synovectomy is usually carried out over the knee and ankle, in the elbow with radial head excision if necessary. In the wrist, dorsal synovectomy and resection of the distal end of the ulna can prevent attrition and rupture of extensor tendons. *Synovectomy has to be virtually complete to avoid regrowth with recurrence of symptoms.*



Osteotomy This should be considered in patients under the age of 60 years with osteoarthritis of the hip or knee due to rheumatoid arthritis. *Osteotomy has the advantage of relieving pain without sacrificing the joint surfaces which have only been partially damaged.*

At the hip, intertrochanteric osteotomy which contains the femoral head within the acetabulum is preferred. At the knee, abduction osteotomy is preferred.

Arthrodesis of the joint gives excellent long-term pain relief. But the stress may cause secondary OA in the adjacent joints unless they are able to compensate for the loss of movement. Lack of movement after fusion of the wrist can be absorbed at the elbow and shoulder without significant functional impairment, but fusion of the hip puts considerable strain on the spine and the knee.

Arthrodesis therefore, tends to be preserved for peripheral joints, such as the wrist, ankle, and IP joints of the hands and feet where the functional loss is less disabling and arthroplasty is less reliable.

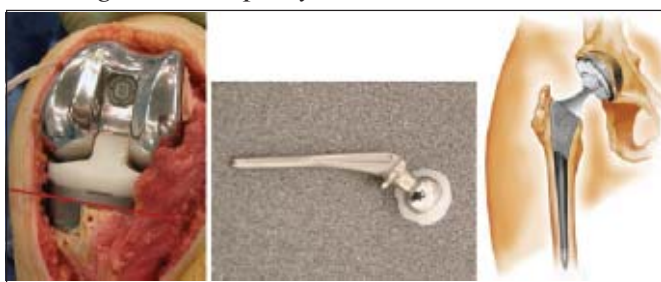


Fig. : Total knee and hip replacement for rheumatoid arthritis

Arthroplasties of the hip, knee (Fig.), ankle, shoulder, elbow, wrist, and hand is indicated in advanced diseases causing severe pain and incapacitating disability due to stiffness and instability.

Modus operandi of surgical procedures in rheumatoid arthritis

Synovectomy

- Failed chemotherapy
- Joint destruction should be minimal
- Useful in knee/ankle

Osteotomy

- Lets than 60 years of age
- When Joint is partially damaged
- Commonly done at hip (Intertrochanteric osteotomy and abduction osteotomy)

Arthrodesis

- Long-term relief
- Reserved for peripheral joints where arthroplasty results in pain
- Causes secondary osteoarthritis in bigger joints

Arthroplasty

- Advanced stages
- in hip and knee

Self-management Techniques for Rheumatoid and Other Forms of Arthritis

Self-management is the most important aspect of the treatment of rheumatoid and other forms of arthritis. People practicing self-management techniques tend to experience less pain and are more active than those who do not practice self-management. In this management the patient is made aware of the disease and the rationale behind the treatment. They are made to realise that the success of the treatment is their ultimate responsibility.

SERONEGATIVE SPONDYLOARTHROPATHIES

Seronegative spondyloarthropathies (SSA) group is gradually emerging as a new entity. These disorders are labelled as *seronegative* to indicate that they have in common the *absence of the rheumatoid factor*. The term spondyloarthropathies is used because in many cases there is involvement of the *spine and sacroiliac joints*. Hence SSA can be defined as an *acute or chronic condition with characteristic involvement of axial joints, absence of RA factor and HLA abnormality*.

The clinical entities which appear to justify inclusions in the SSA group are as follows:

- Ankylosing spondylitis
- Reiter's disease
- Psoriatic arthritis
- Ulcerative colitis
- Crohn's disease

Enteropathy

- Whipple's disease /arthritis
- Behcet's syndrome)

ANKYLOSING SPONDYLITIS MARIE-STRUMPELL DISEASE

DEFINITION This is a chronic progressive inflammatory disease of the sacroiliac joints and the axial skeleton.

Causes. Causes are unknown. It is found to be strongly associated with HLA-B27 genetic marker is about 85 per cent. *Age/sex* Common in young male adults (M:F – 10:1).

Pathology. The initial inflammation of the joints is followed by synovitis, arthritis cartilage destruction, fibrous and later bony ankylosis

Clinical Features. Patient usually complains of early morning stiffness and pain in the back. On examination patient has a stiff spine. Test for sacroiliac joint involvement are positive Cervical spine involvement is tested by asking the patient to touch the wall with the back of the head without raising his or her chin (Heche's test). If the chest expansion is less than 5 cm, involvement of thoracic spine is suspected.

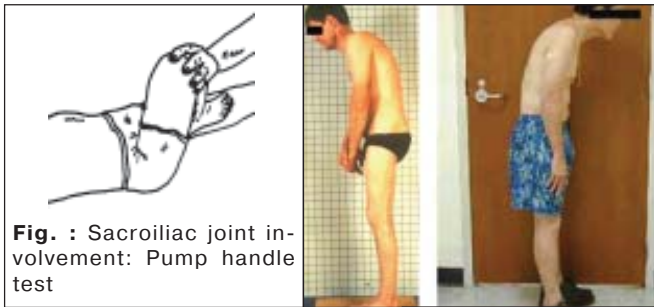


Fig. : Sacroiliac joint involvement: Pump handle test

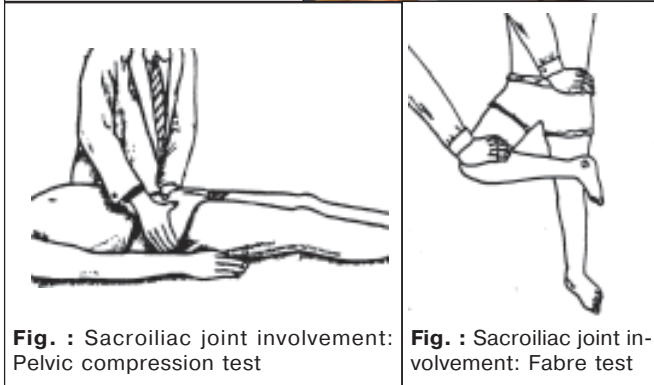


Fig. : Sacroiliac joint involvement: Pelvic compression test

Fig. : Sacroiliac joint involvement: Fabre test

Extra-articular manifestations These include acute iritis (25%), pericarditis, aortic incompetence, subluxation of atlantoaxial joints, apical lobe fibrosis, generalised osteoporosis, etc.

Radiographs of SI joint show haziness, subchondral erosions, sclerosis (Fig.) widening of SI joint, etc. **Radiographs of spine** show squaring of vertebra, loss of lumbar lordosis, calcification of anterior longitudinal ligament bringing osteophytes, bamboo spine (Fig), etc.

Treatment. Conservative treatment consists of rest, NSAIDs (indo-methacin) physiotherapy, back exercises, etc. Radiotherapy may also help. Surgical treatment consists of spinal osteotomy to correct spine deformity total hip replacement and total knee replacement for hip and knee joint ankylosis.



Fig. : Sacroiliac joint involvement: Pelvic compression test

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